Final Environmental Impact Statement for the Revised Land and Resource Management Plan for

National Forests in Florida

Apalachicola National Forest (Franklin, Leon, Liberty, and Wakulla Counties)
Choctawhatchee National Forest (Okaloosa, Santa Rosa, and Walton Counties)
Ocala National Forest (Lake, Marion, and Putnam Counties)
Osceola National Forest (Baker and Columbia Counties)

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Abstract:

Five alternatives for revision of the Land and Resource Management Plan for National Forests in Florida (Forest Plan) are described and compared in this Final Environmental Impact Statement. The alternatives are labeled A, B, C, D, and E. **Alternative E is the alternative preferred by the Forest Service.**

The *Revised Land and Resource Management Plan for the National Forests in Florida* is a companion document that provides the detailed direction of the preferred alternative. The *Record of Decision for the Revised Land and Resource Management Plan for the National Forests in Florida* is also a companion document that gives the rationale for the preferred alternative.

February 1999

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Public Lands in Florida Map

CHAPTER 1

PURPOSE AND NEED

This Final Environmental Impact Statement (FEIS) describes the analysis of several alternatives for revising the *Land and Resource Management Plan for National Forests in Florida* (Forest Plan) and discloses the environmental effects of these alternatives. The FEIS is guided by the implementing regulations of the National Environmental Policy Act (NEPA) found in the Council of Environmental Quality Regulations, Title 40, Code of Federal Regulations (CFR), Part 1500. The companion document to this FEIS is the Revised Forest Plan—a detailed presentation of the selected alternative.

Forest Plan Decisions

The Forest Plan provides programmatic, strategic direction on a forestwide basis. It is not a simple collection of projects to implement and makes no site-specific decisions. Decisions made in the Forest Plan are:

- A determination of the multiple-use goals, objectives, and desired future conditions (DFCs) for *National Forests in Florida*, including estimates of goods and services expected.
- A determination of multiple-use prescriptions (including associated standards) for each management area, including probable and proposed practices.
- An identification of land that is suitable for timber production.
- A determination of the allowable sale quantity for timber and the associated sale schedule.
- A recommendation of wilderness areas.
- A recommendation for wild and scenic rivers.
- A determination of monitoring and evaluation requirements.

National forest management is directed by decisions in addition to the Forest Plan. Other decisions that provide management direction are:

- *Record of Decision, Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* (RCW EIS) (USDA Forest Service, Southern Region, June 1995).

- *Record of Decision, Final Environmental Impact Statement for Standards and Guidelines for the Southern Regional Guide* (USDA Forest Service, Southern Region, June 1984).
- *Record of Decision, Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle* (USDA Forest Service, Southern Region, April 1987).
- *Record of Decision, Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont* (USDA Forest Service, Southern Region, February 1989).

Several exceptions to these Regional directions are proposed for *National Forests in Florida*:

Record of Decision, Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region.

In Alternatives C and E, foraging requirements would be reduced on the Apalachicola Ranger District (RD). Minimum stand basal area for thinning would be reduced from 70 square feet to 60 square feet. In Alternatives C and E, 1,800 acres of irregular shelterwood would be allowed in slash pine within red-cockaded woodpecker (RCW) habitat management areas (HMAs). This is an exception to the age class restrictions established in the RCW EIS.

Record of Decision, Final Environmental Impact Statement for Standards and Guidelines for the Southern Regional Guide.

In Alternatives B, D, and E, the Regional Stocking Guides would be varied to include a wider range of stocking levels for longleaf, slash, and sand pine.

In Alternatives B, C, D, and E, the maximum regeneration harvest opening would be increased for sand pine.

Record of Decision, Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont.

In Alternatives B, C, D, and E, growing-season burns would be allowed on the same site without timing restrictions.

Forest Profile

National Forests in Florida extends from central Florida to the panhandle and includes the Apalachicola, Choctawhatchee, Ocala, and Osceola National Forests (NFs).

Apalachicola NF (575,489 acres) is located in Franklin, Leon, Liberty, and Wakulla Counties. Its terrain is flat to gently rolling and pocked by many sinkholes, bays, and swamps. Soils range from excessively drained to very poorly drained. Natural fertility is

low, but in specific locations it may run high. The primary vegetation is longleaf pine and slash pine with an understory of wiregrass, palmetto, and gallberry. Apalachicola NF has two ranger districts: Apalachicola RD (based in Bristol) covers land west of the Ochlockonee River and Wakulla RD (based near Crawfordville) covers land east of the river.

Choctawhatchee NF is located in Okaloosa, Santa Rosa, and Walton Counties. This land was managed by the Forest Service until 1940, when all the lands were transferred to the War Department. Most of this land is now Eglin Air Force Base. In June 1980, 1,153 acres were restored to national forest status when these acres were declared excess and transferred to the Forest Service. The majority of this land is under special-use permit to State and county governments. This forest is administered by the Apalachicola District Ranger.

Ocala NF (383,362 acres) is located in Lake, Marion, and Putnam Counties. Its terrain is gently rolling. Soils range from poorly drained to excessively drained with low natural fertility. There are 30,857 acres of lakes and ponds scattered throughout the forest. Ocala NF has many popular recreation areas. A wide variety of vegetation thrives on the forest—including sand pine, longleaf pine, cypress, and hardwood. Ocala NF has two ranger districts: Lake George RD (based near Silver Springs) covers land north of State Highway 40 and Seminole RD (based in Umatilla) covers land south of State Highway 40.

Osceola NF (194,732 acres) is located in Baker and Columbia Counties. Its terrain is flat. Soils are poorly drained and low in natural fertility. Longleaf pine predominates on the higher, drier ground, and the poorly drained swampland features cypress, pine, and a variety of southern hardwood. Osceola NF is based in Olustee.

Reason for Revision

The Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act of 1976 (NFMA), requires that each national forest be managed under a forest plan. Regulations governing preparation of forest plans are found in Title 36, Code of Federal Regulations, Part 219. The purpose of a forest plan is to provide an integrated framework for analyzing and approving future site-specific projects and programs. Regulations require that forest plans be revised on a 10-to-15-year cycle, or sooner if conditions or the areas covered by the plan change significantly.

The *Land and Resource Management Plan for National Forests in Florida* was approved on January 6, 1986. There were three administrative appeals. One appeal was dismissed. The Regional Forester entered into a period of negotiation with the other two appellants in an effort to resolve the differences.

In February 1990, after 4 years of negotiations, it became clear that an agreement on all issues would not be reached. As a result, in March 1990, the Forest Service filed a Notice of Intent in the *Federal Register* stating that the agency would be developing a significant amendment to the Forest Plan with the intent of resolving the unsettled issues.

In 1990, while the Forest Plan process was under way, the Regional Forester began a process to develop long-term direction for management of the red-cockaded woodpecker. It became apparent that the results of the latter process would have a major impact on management of large parts of the forests. Since one of the issues being addressed in the Florida amendment was RCW management, the Florida planning process was synchronized with the regional RCW EIS process to avoid preemption of the decisions.

National Forests in Florida was scheduled to begin review and revision of the Forest Plan in 1993, with the goal of completing the revision process within 10 years of the date of the current Forest Plan (1986). Because completion of the amendment would occur near the scheduled initiation of the revision, the Regional Forester concluded that the Forest Plan amendment process then under way should be conducted within the context of a revision rather than an amendment. Doing this would make better use of the public involvement and the reassessment accomplished up to that point. Accordingly, in April 1992, the Chief of the Forest Service authorized *National Forests in Florida* to revise the Forest Plan.

Planning Process

Forest planning occurs within the overall framework provided by implementing the regulations of NFMA and NEPA. National, regional, and forest planning form an integrated three-level process. This process requires a continuous flow of information and management direction among three Forest Service administrative levels. Information from forest planning flows upward to the national level for use in the RPA program where, in turn, information flows back to the forest level. In this structure, regional planning is the principal process for conveying information between forest and national levels.

Planning actions used in this planning process are:

1. Identification of issues, concerns, and opportunities
2. Development of planning criteria
3. Inventory of resources and data collection
4. Analysis of the Management Situation
5. Formulation of alternatives
6. Estimation of effects of alternatives
7. Evaluation of alternatives
8. Recommendation of preferred alternative
9. Approval and implementation
10. Monitoring and evaluation

The results of planning steps 1-8 are described in this document. Refer to Appendix A, ``Summary of Public Involvement," and Appendix B, ``Analysis Process," for more detail on the results of these steps.

This document will be used in future environmental analyses through tiering. *Tiering* means that environmental analyses and documents prepared for projects arising from the Forest Plan will refer to the Final Environmental Impact Statement and Forest Plan.

Preliminary Issues

Public involvement is a key part of the planning process. Providing for public comment helps identify what people want from the national forests in the form of goods, services, and environmental conditions. Issues submitted by the public, as well as from within the Forest Service, guided the need to change current management strategies. Many of the issues listed below were obtained from appeals of the Forest Plan. Other issues were submitted by the public during scoping efforts conducted by Forest Service personnel during the past 4 years.

In addition to the emerging issues, the need for change was identified through an Analysis of the Management Situation. This analysis also provides a basis for formulating a broad range of reasonable alternatives. A detailed account of the public involvement process is in Appendix A. A summary of the Analysis of the Management Situation is in Appendix B.

On March 27, 1990, a scoping letter was sent to interested and affected publics, asking for comments on 10 preliminary issues to be addressed in the significant amendment of the Forest Plan. The following are the preliminary issues.

1. Longleaf Pine-Wiregrass Management. Issues concern the restoration and maintenance of longleaf pine-wiregrass communities, conversion of off-site slash pine to longleaf pine, techniques used to restore and maintain these communities, timber management practices allowed, natural regeneration techniques used, stocking rates to be applied, and frequency of prescribed burning.

2. Red-cockaded Woodpecker Habitat Management. Issues concern the level of timber harvested under the *Record of Decision, Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* constraints, clearcutting as a regeneration method, old-growth conditions, alternative methods of RCW management, prescribed burning methods to improve RCW habitat, protection of cavity trees during prescribed burning, snag retention, and socioeconomic impacts due to reduced timber harvest levels.

3. Hardwood Mast Production. Issues concern providing for mast production by protecting stands, or by allowing burning that would result in upland oak in areas where they would occur naturally.

4. Pine Restoration of Titi. Issues concern using site preparation to reclaim encroached areas, restoring titi, preserving titi communities, using prescribed fire, monitoring, and using heavy equipment in pine restoration work.

5. Management of Wilderness Study Areas (WSAs). Issues concern preserving and maintaining wilderness values for the Clear Lake area on the Wakulla RD and Natural Area on the Osceola NF.

6. Savannah Management. Issues concern the protection of savannahs, maintenance of their natural state through the use of fire, use of firelines, and protection of rare and endangered species.

7. Fire Plowing Methods and Procedures. Issues concern the adverse effects of fireline use, reduction in the use of firelines or stopping the use of firelines, reducing fireline impacts, alternatives to fireline construction, and rehabilitation of firelines.

8. Use of Off-Highway Vehicles (OHVs). Issues concern resource damage caused by OHVs and what OHV restrictions should apply.

9. Management Areas and Desired Future Conditions. Issues concern how desired future conditions are allocated across the forests.

10. Potential Wild and Scenic Rivers Management. Issues concern the designation of waterways and the protection of proposed areas.

On January 2, 1991, another letter was sent to the public listing the desired future conditions that were proposed for the significant amendment. When the decision was made to revise the Forest Plan, an additional letter was sent on July 14, 1992, asking for comments on issues for the Forest Plan revision.

Based on previous public comments, four preliminary alternatives were developed and descriptions mailed to the public in January 1995. Public meetings were held throughout the state, and comments were solicited on the preliminary alternatives. Written comments were entered into a data base and reviewed for additional issues that would need to be addressed in the Forest Plan.

Final Issues

The preliminary issues and the additional issues identified through public involvement were stated in the form of planning questions to be addressed in the planning process. The entire list of planning questions can be found in Appendix A. The issues and planning questions are summarized in the following questions, which were used to develop alternatives for the Forest Plan revision.

1. How much and by what methods should the longleaf pine-wiregrass community be restored and maintained?

2. How should we maintain the sand pine-scrub oak community?

3. How should we manage and protect riparian and wetland areas?
4. How should special aquatic, botanic, geologic, historic, paleontologic, and scenic areas be protected and managed?
5. What lands should be designated as wilderness, and what practices should be permitted in these areas?
6. What types, amounts, and mix of recreational opportunities should be provided, and what consideration should be given to compatibility of users?
7. What should be the access policy for motorized vehicles?
8. What is the proper combination of open and closed roads to meet public needs?
9. How should we manage habitat to enhance certain wildlife populations—such as game and proposed, endangered, threatened, and sensitive species?
10. What will be the level of timber harvest, and what silvicultural systems will be used to manage the forests?
11. What other types of forest products will be gathered and what uses will be permitted on the national forests?

In January 1997, a Draft Environmental Impact Statement and a Proposed Revised Forest Plan were published and distributed for public comment. No new significant issues were identified. Some changes were made in these documents based on public comment. The major changes between draft and final are listed in the summary.

Planning Process Records

National Forests in Florida's Interdisciplinary Team is responsible for developing the revised Forest Plan. Efforts were made to provide detailed explanations of each step of the revision in the form of process (or planning) records. This FEIS contains summaries of the process records and includes references to the parent records. Process records are on file in the Forest Supervisor's Office in Tallahassee, Florida. To review these records, contact:

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CHAPTER 2

COMPARISON OF ALTERNATIVES

This chapter summarizes and compares the alternatives that were developed as potential management strategies for *National Forests in Florida*. It describes the alternative development process, considers alternatives in detail, and compares alternatives.

Needs identified through monitoring, evaluation, Analysis of the Management Situation, and public comments were instrumental in developing alternatives. These alternatives represent ways of revising a forest plan that address both these needs and the purpose of a forest plan as directed by National Forest Management Act (NFMA) of 1976.

There are countless possible alternatives. However, we can only study a small portion of those alternatives. It is important that those we study be implementable and span a full range of possibilities. Alternatives must be compatible with current laws and regulations governing national forest land management. All alternatives must be within the National Forest Management Act (36 CFR 219.27) requirements for resource protection, soil and water protection, vegetation manipulation, silvicultural practices, even-aged management, riparian area protection, and diversity. Many of these requirements are met by standards and guidelines that apply forestwide in all alternatives. A detailed list of these standards and guidelines is found in Chapter 3, ``Forestwide Standards and Guidelines," of the Revised Forest Plan.

Alternatives Considered, But Eliminated From Detailed Study

We received many comments and suggestions during our scoping process and during the comment period on the Draft Environment Impact Statement and the Proposed Revised Forest Plan. All suggestions were discussed and influenced the development of the alternatives. Alternatives not considered in detail included:

1. Suggestions were made to modify the pine management within red-cockaded woodpecker (RCW) habitat management areas (HMAs) as follows: Reduce the foraging guidelines to a minimum of 1,200 stems > 10 inches within ½ mile of an RCW group; allow harvesting of 24,000 acres by the irregular shelterwood method during the next 10 years; and adopt a rotation age of 80 years for longleaf pine and 60 years for slash pine. These proposals are not consistent with the *Record of Decision, Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the*

Southern Region (June 1995). We have considered alternatives which are not consistent with these guidelines, but not to the degree suggested above. Informal discussions with Regional Forest Service staff and U.S. Fish and Wildlife Service staff indicated that such a wide variation from the Regional RCW guidelines would not be acceptable and therefore these proposals were not considered in detail.

2. One suggestion proposed a significant increase in roadless areas. Although parts of this proposal are reflected in Alternatives B and D, this suggestion was not studied in detail because a roadless area review (Appendix C, ``Evaluation of RARE II Areas") indicated that few areas met roadless area criteria.

3. Another suggestion was to leave the forests uncontrolled or to mimic natural processes as closely as possible. This suggestion was either too risky in an urban interface or was outweighed by resource values that would be lost if implemented.

4. Responses from the public from scoping efforts and public workshops included the suggestion to stop all timber cutting on the national forests in Florida. This is outside the purpose of the national forests as determined by the Multiple-Use Sustained-Yield Act of 1960 and the Organic Act of 1897.

5. Many people were concerned about the Pinecastle Bombing Range on the Ocala NF. An Interagency Agreement between the Forest Service and the U.S. Department of Navy for use of the area expires in 1999. An alternative was considered that would not allow for the renewal of this agreement. After careful consideration, this decision was determined more appropriate to consider after conducting a site-specific analysis instead of a programmatic analysis in this FEIS. A separate environmental impact statement to address use of this area will be prepared by the Department of Navy and the Forest Service.

6. Other suggestions were made to add alternatives with different groupings of desired future conditions (DFCs). With 31 different DFCs, a large variety of combinations would be possible. We believe that the alternatives considered in detail provide a sufficient range of feasible alternatives based on the issues, the mission of the Forest Service, and the existing conditions.

Alternatives Considered in Detail

Four preliminary alternatives were developed using a combination of DFCs: Alternatives A, B, C, and D. These alternatives were described in a newsletter that was provided to the public in January 1995. In addition, public workshops were conducted in February 1995 at various locations in Florida to gather public comments (*see* Appendix A, ``Summary of Public Involvement"). After these meetings, an additional alternative was developed—Alternative E, the preferred alternative. The original alternatives were adjusted based on public comment and Forest Service review. All alternatives meet the recommended 1990 Forest and Rangeland Renewable Resources Planning Act (RPA) program. Recommended program themes include:

- Continue to implement multiple-use management of National Forest System lands, while rounding out the balance among the resources.
- Enhance the recreation, wildlife, fisheries, soil, and water resource programs.
- Increase the emphasis on the quality, as well as the quantity, of resource outputs—such as high-quality water, recreation, and timber products.
- Continue to ensure the sustainability of resource outputs, resource conditions, and resource values.
- Increase contributions to the economic well-being of rural communities, especially by diversifying the resource base on which these economies depend.

Alternatives were developed using a set of desired future conditions that provided different ways of responding to the issues. The desired future conditions were applied on the ground using ecological units or administrative boundaries (*see* Appendix B, ``Analysis Process"). Each DFC contained a set of goals and a list of management practices that would contribute to the desired future conditions. After listing the management practices associated with each desired future condition, standards and guidelines necessary to attain them were developed. The interdisciplinary team originally developed 14 desired future conditions. As a result of public input, the list was expanded to 31.

The original desired future conditions were renumbered and allocated throughout the alternatives. A detailed explanation of the desired future conditions is found in Appendix B. The following desired future conditions apply to the alternative maps.

0.0 Congressionally Designated Lands

DFC 0.1: Trailless Wilderness

An area where native species respond to natural forces with little or no human intervention. Some ecological restoration may occur. Opportunities for solitude and wildland orienteering are found here. There are no trails or facilities.

DFC 0.2: Wilderness with Trails

An area where native species inhabit an unmodified environment. Some ecological restoration may occur. Isolation from most human activity is possible. Travel is primitive but may occur on improved trails. Other primitive-level recreation facilities also may be found.

DFC 0.3: Wild and Scenic River

An area through which flows an unimpeded and unpolluted river with a watershed and shoreline that is mostly undeveloped. The area is noted for its scenic and recreational value.

DFC 0.4: Wilderness Study Area

An area under consideration for wilderness status.

1.0 Remote Areas

DFC 1.1: Remote Wetland

A remote undisturbed area that is suitable for the recovery of proposed, endangered, threatened, and sensitive species native to wetlands. Access is very limited. There are no facilities. This area is unsuitable for timber production.

2.0 Research Areas

DFC 2.1: Research Natural Area

An area that typifies botanic, aquatic, geologic, or similar natural situations in a pristine condition and, as a result, provides unique opportunities for scientific study.

DFC 2.2: Experimental Forest

An area where research concerning the effects of forest management practices is conducted by the Southern Research Station.

DFC 2.3: Genetic Resource Management Area

An area devoted to the study, conservation, and propagation of sand pine, where threatened, endangered, and sensitive plants are propagated to conserve their gene resources.

3.0 Special Interest Area

DFC 3.1: Special Interest Area

An area with special aquatic, biotic, geologic, historic, paleontologic, or scenic values. It is managed for preservation and public enjoyment, study, and use.

4.0 Recreation Emphasis Areas

DFC 4.1: Minimum Development, Nonmotorized

An area with a natural landscape where opportunities exist to practice wildland skills. Only administrative motorized vehicles are allowed. This area is unsuitable for timber production.

DFC 4.2: Minimum Development, Motorized

An area with a natural landscape were opportunities exist to practice wildland skills. Motorized access is permitted. This area is unsuitable for timber production.

DFC 4.3: Low Recreational Development

An area with a natural-appearing landscape where recreational facilities have a low level of development. There is a moderate density of roads. This area is unsuitable for timber production.

DFC 4.4: Moderate Recreational Development

An area with a natural-appearing landscape where there is an emphasis on dispersed recreation with facilities at a moderate level of development. There is a moderate density of roads. This area is unsuitable for timber production.

DFC 4.5: Developed Recreation Area

An area where recreation facilities are highly developed and designed for use by a large number of people.

5.0 Hardwood/Cypress Forests

DFC 5.1: No Hardwood/Cypress Timber Production

An area of bottomland hardwood interspersed with small pine uplands. Bottomlands are unsuitable for timber production, but pine uplands are suitable for timber production.

DFC 5.2: Hardwood/Cypress, Timber Production

An area of bottomland hardwood interspersed with small pine uplands. Both bottomlands and uplands are suitable for timber production.

6.0 Longleaf and Slash Pine

DFC 6.1: Longleaf/Slash Pine, RCW Management

An area with longleaf or slash pine where stand structure is primarily large patches. This area is within an RCW HMA. Rotation ages are 120 years for longleaf pine and 100 years for slash pine, with a maximum opening size of 25 acres. Cattle grazing is not permitted.

DFC 6.2: Longleaf/Slash Pine, RCW Management, Cattle

An area with longleaf or slash pine where stand structure is primarily large patches. This area is within an RCW HMA. Rotation ages are 120 years for longleaf pine and 100 years for slash pine, with a maximum opening size of 25 acres. Cattle grazing is permitted.

DFC 6.3: Longleaf/Slash Pine, No RCW Management

An area with longleaf or slash pine where stand structure is primarily large patches. Rotation ages are 120 years for longleaf pine and 100 years for slash pine, with a maximum opening size of 40 acres. This area is not within an RCW HMA. Cattle grazing is not permitted.

DFC 6.4: Longleaf/Slash Pine, No RCW Management, Short Rotation

An area with longleaf or slash pine where stand structure is primarily large patches. Rotation ages are 80 years for longleaf pine and 60 years for slash pine, with a maximum opening size of 80 acres. This area is not within an RCW HMA. Cattle grazing is not permitted.

DFC 6.5: Energy Wood

An area where wood fiber is rapidly produced by growing trees at very high density on a rotation of less than 10 years. Fertilization using sewage effluent is permitted. The wood fiber is burned to produce electricity.

7.0 Longleaf and Slash Pine, Adaptive Management

DFC 7.1: Longleaf/Slash Pine, Adaptive Management, RCW Management

An area with longleaf or slash pine where stand structure is moved toward a diverse patch size structure. Except for on-site slash pine regeneration (two-aged) and longleaf pine restoration (even-aged), regeneration patches are usually small (¼-2 acres) for the next 20 years (uneven-aged). This area is within an RCW HMA. Cattle grazing is not permitted.

DFC 7.2: Longleaf/Slash Pine, Adaptive Management, RCW Management, Cattle

An area with longleaf or slash pine where stand structure is moved toward a diverse patch size structure. Except for on-site slash pine regeneration (two-aged) and longleaf pine restoration (even-aged), regeneration patches are usually small (¼-2 acres) for the next 20 years (uneven-aged). This area is within an RCW HMA. Cattle grazing is permitted.

DFC 7.3: Longleaf/Slash Pine, Adaptive Management, No RCW Management

An area with longleaf or slash pine where stand structure is moved toward a diverse patch size structure. Except for on-site slash pine regeneration (two-aged) and longleaf pine restoration (even-aged), regeneration patches are usually small (¼-2 acres) for the next 20 years (uneven-aged). This area is not within an RCW HMA. Cattle grazing is not permitted.

8.0 Sand Pine and Oak Scrub

DFC 8.1: Sand Pine, Natural Regeneration, Large Openings

An area with natural sand pine scrub where clearcuts up to 320 acres mimic the natural mortality patterns caused by wildfires and provide the large openings preferred by scrub-jays. Natural regeneration of sand pine, natural densities of trees, and the use of prescribed fire for site preparation are emphasized. Some old-growth acres are maintained.

DFC 8.2: Sand Pine, Mixed Regeneration, Moderate Openings

An area with a natural sand pine scrub with clearcuts up to 160 acres that provide the large openings preferred by the scrub-jay. Both natural and artificial regeneration are practiced. Natural densities of trees and the use of prescribed fire for site preparation are emphasized. Some old-growth acres are maintained.

DFC 8.3: Sand Pine, Artificial Regeneration, Small Openings

An area of sand pine scrub that is managed on a 50-year rotation with clearcuts up to 120 acres. Artificial regeneration using genetically improved seed is encouraged, as is a stocking density that maximizes the production of high-quality wood fiber.

DFC 8.4: Scrub-Jay Management Area

An area managed, by burning the area on a 15-year rotation, to exclude sand pine and to create an oak scrub habitat that is kept in the stage most useful to the threatened Florida scrub-jay.

9.0 Special Administration

DFC 9.1: Pinecastle Bombing Range

An area of sand pine scrub used by the U.S. Department of Navy to train air squadrons in air-to-ground warfare.

DFC 9.2: Forest/Urban Interface

An area characterized by an interface between commercial and residential private lands and National Forest System lands. The forest communities are a mixture of forest types and conditions. Day-use recreation is emphasized by the development of a moderately dense system of trails for various uses, both motorized and nonmotorized.

DFC 9.3: Choctawhatchee Lands

An area consisting of isolated and small parcels of Eglin Air Force Base that are being returned to the National Forest System. Parcels are managed at a basic maintenance level. Projects do not occur within them that would change their character. Parcels may be considered for exchange.

Alternative Descriptions

The five alternatives considered in detail are summarized below. Each alternative has a map displaying the desired future condition allocations and a narrative describing the significant management highlights of each alternative. Choctawhatchee lands are not shown due to scattered ownership and scale requirements.

In all alternatives, off-site slash pine and sand pine would be restored to the appropriate species, usually longleaf pine. All alternatives permit the use of any silvicultural system and regeneration method based on site-specific requirements. However, the emphasis and mixture of harvest methods depend on the desired future conditions of the alternative.

Preferred Alternative—Alternative E

In this alternative, adaptive management would be emphasized in restoring and maintaining native ecosystems and providing for balanced human use.

The forests would move toward a diverse patch size structure in longleaf and slash pine.

Hardwood/cypress would be unsuitable for timber production.

Cross-country motorized travel would not be permitted.

A system of trails will be planned for each forest. After the trail system is established, (approximately 2 years after plan approval), motorized vehicles and bicycles would have to stay on designated trails or open, numbered roads in some areas of the forest. In other areas of the forest, motorized vehicles and bicycles could travel on unmarked travelways in addition to designated trails and open, numbered roads.

Some roads would be scheduled for closure, and some roads would be converted to trails.

Alternative A

Alternative A reflects the current plan and is the ``no action'' or ``no revision'' alternative. Management would continue as directed in the 1986 Forest Plan, as amended.

Alternative B

In this alternative, forest management activities would be ecologically based and would be intended to restore and maintain native ecosystems. Human use of the forest would be subordinate to other biological needs.

The forests would move toward a diverse patch size structure in longleaf and slash pine.

Hardwood/cypress would be unsuitable for timber production.

Cross-country motorized travel would not be permitted.

Motorized vehicles could travel on marked trails that are designated for their use.

Some roads would be scheduled for closure.

Alternative C

In this alternative, the forest would be managed to produce a high level of commodities while maintaining the health of the ecosystem.

The forests would continue to have the current patch size structure.

Most hardwood/cypress would be suitable for timber production.

Motorized vehicles could travel cross-country in an open area.

Motorized vehicles could travel on an unmarked travelway in an open area.

No roads would be scheduled for closure.

Alternative D

In this alternative, the emphasis would be on providing a wide range of recreational opportunities with a focus on dispersed, primitive and semiprimitive settings.

Hardwood/cypress would be unsuitable for timber production.

Cattle grazing would not be permitted.

Cross-country motorized travel would not be permitted.

Motorized vehicles could travel on marked trails that are designated for their use.

This alternative would designate a higher density of motorized trails than Alternatives B and E. Some trails would be only open during hunting season.

Some roads would be scheduled for closure.

Apalachicola National Forest
Alternative A
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Bradwell Bay and Mud Swamp/New River would be managed as wilderness with trails (DFC 0.2).

Wild and Scenic River: Sopchoppy River (DFC 0.3).

Wilderness Study Area (WSA): Clear Lake (DFC 0.4).

Research Area: Savannah research natural area (RNA) (DFC 2.1).

Special Interest Areas: Some of the savannahs, Leon Sinks, Morrison Hammock, River Sinks, and Rocky Bluff (DFC 3.1).

Hardwood/Cypress: Most hardwood/cypress would be suitable for timber production (DFC 5.2).

Red-cockaded Woodpecker: The entire forest would be within an RCW HMA (DFCs 6.1 and 6.2).

Longleaf/Slash Pine Management: The forest would continue to have the current patch size structure. RCW guidelines would set the parameters (DFCs 6.1 and 6.2).

Range: Cattle grazing would be permitted on a portion of the Apalachicola RD (DFC 6.2).

Motorized Access Policy:

Motorized vehicles could travel cross-country in an open area.

Motorized vehicles could travel on unmarked travelways in an open area.

Some roads would be scheduled for closure.

Apalachicola National Forest
Alternative B
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Bradwell Bay, Clear Lake, and Mud Swamp/New River would be managed as wilderness with trails (DFC 0.2).

Wild and Scenic Rivers: New, Ochlockonee, and Sopchoppy Rivers (DFC 0.3).

Research Area: Savannah RNA would be expanded to include all of the savannahs between Wilma and Sumatra, as well as the surrounding pine forest (DFC 2.1).

Special Interest Areas: All of the savannahs that would not be in the RNA, Leon Sinks, Morrison Hammock, River Sinks, and Rocky Bluff (DFC 3.1).

Recreational Areas:

Fisher Creek and Munson Hills areas would be managed for low recreational development (DFC 4.3).

Bradwell Tract and bottomlands of the Apalachicola and Ochlockonee Rivers would be managed for moderate recreational development (DFC 4.4).

Hardwood/Cypress: Hardwood/cypress would be unsuitable for timber production.

Red-cockaded Woodpecker: The entire forest would be within RCW HMAs (DFCs 7.1 and 7.2).

Longleaf/Slash Pine Management: The forest would move toward a diverse patch size structure (DFCs 7.1 and 7.2). Except for on-site slash pine regeneration and longleaf pine restoration, regeneration patches usually would be small (¼-2 acres) for the next 20 years.

Range: Cattle grazing would be permitted on a portion of the Apalachicola RD (DFC 7.2).

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

Motorized vehicles could travel on marked trails that are designated for their use.

Some roads would be scheduled for closure.

Apalachicola National Forest
Alternative C
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Mud Swamp/New River would be managed as a trailless wilderness (DFC 0.1). Bradwell Bay would be managed as a wilderness with trails (DFC 0.2).

Wild and Scenic River: Sopchoppy River (DFC 0.3).

Research Area: Savannah RNA (DFC 2.1).

Special Interest Areas: Some of the savannahs, Leon Sinks, Morrison Hammock, River Sinks, and Rocky Bluff (DFC 3.1).

Hardwood/Cypress: Most hardwood/cypress would be suitable for timber production (DFC 5.2).

Red-cockaded Woodpecker: The entire forest would be within RCW HMAs (DFCs 6.1 and 6.2). Foraging habitat requirements would be reduced by one-third on the Apalachicola RD.

Longleaf/Slash Pine Management: The forest would continue to have the current patch size structure. Rotation ages would be 120 years for longleaf pine and 100 years for slash pine. Maximum opening size would be 40 acres on the Apalachicola RD and 25 acres on the Wakulla RD (DFCs 6.1 and 6.2).

Range: Cattle grazing would be permitted on a portion of the Apalachicola RD (DFC 6.2).

Energy Wood: An area near Tallahassee would be managed to provide wood fiber for energy production (DFC 6.5).

Motorized Access Policy:

Motorized vehicles could travel cross-country in an open area.

Motorized vehicles could travel on unmarked travelways in an open area.

No roads would be scheduled for closure.

Apalachicola National Forest
Alternative D
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Bradwell Bay would be managed as a trailless wilderness (DFC 0.1). Clear Lake and Mud Swamp/New River would be managed as wilderness with trails (DFC 0.2).

Wild and Scenic Rivers: New, Ochlockonee, and Sopchoppy Rivers (DFC 0.3).

Research Area: The Savannah RNA would be expanded slightly (DFC 2.1).

Special Interest Areas: An area of mixed savannahs and pine forest between Wilma and Sumatra, all other savannahs, Bradwell Tract, Leon Sinks, Morrison Hammock, River Sinks, Rocky Bluff, and Wallace Tract (DFC 3.1).

Recreational Areas:

Ditch Bay would be managed for minimum development, nonmotorized use (DFC 4.1). In this area, roads would be closed.

Juniper Creek Islands/Gum Bay/Long Bay area would be managed for minimum development, motorized use (DFC 4.2). In this area, some roads would be closed.

A tract along New River would be managed for low recreational development (DFC 4.3).

Bottomlands of the Apalachicola and Ochlockonee Rivers would be managed for moderate recreational development (DFC 4.4), as would the Lake Bradford Tract.

Hardwood/Cypress: Hardwood/cypress would be unsuitable for timber production.

Red-cockaded Woodpecker: The entire forest would be within RCW HMAs (DFCs 6.1 and 7.1).

Longleaf/Slash Pine Management: On the Wakulla RD, the forest would continue to have the current patch size structure. Rotation ages would be 120 years for longleaf and 100 years for slash pine, with a maximum opening size of 25 acres (DFC 6.1). On the Apalachicola RD, the forest would move toward a more diverse patch size structure (DFC 7.1).

Range: Cattle grazing would not be permitted.

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

Motorized vehicles could travel on marked trails that are designated for their use.

This alternative would designate a higher density of motorized trails than Alternatives B and E. Some trails may be only open during hunting season.

Some roads would be scheduled for closure.

Apalachicola National Forest
Alternative E
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Mud Swamp/New River would be managed as a trailless wilderness (DFC 0.1). Bradwell Bay and Clear Lake would be managed as wilderness with trails (DFC 0.2).

Wild and Scenic Rivers: New, Ochlockonee, and Sopchoppy Rivers (DFC 0.3).

Research Areas: Savannah RNA (DFC 2.1).

Special Interest Areas: All savannahs outside the Savannah RNA, Bradwell Tract, Lake Bradford Tract, Leon Sinks, Morrison Hammock, River Sinks, and Rocky Bluff (DFC 3.1).

Recreational Areas: Bottomlands of the Apalachicola and Ochlockonee Rivers would be managed for moderate recreational development (DFC 4.4).

Hardwood/Cypress: Hardwood/cypress would be unsuitable for timber production.

Red-cockaded Woodpecker: The entire forest would be within RCW HMAs (DFCs 7.1, 7.2, and 9.2). Foraging requirements would be reduced by one-third on the Apalachicola RD.

Longleaf/Slash Pine Management: The forest would move toward a diverse patch size structure (DFCs 7.1, 7.2, and 9.2). Except for on-site slash pine regeneration and longleaf pine restoration, regeneration patches usually would be small (¼-2 acres) for the next 20 years.

Range: Cattle grazing would be permitted on a portion of the Apalachicola RD (DFC 7.2). Allotments vacant for 5 consecutive years would be discontinued.

Urban Interface: An urban interface area would be designated on the east side of the forest (DFC 9.2). This area would have a higher density of trails and increased law enforcement.

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

A system of trails will be planned for each forest. After the trail system is established (approximately 2 years after plan approval), motorized vehicles and bicycles would have to stay on designated trails or open, numbered roads in some areas of the forest. In other areas of the forest, motorized vehicles and bicycles could travel on unmarked travelways in addition to designated trails and open, numbered roads.

Some roads would be scheduled for closure.

Ocala National Forest
Alternative A
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Alexander Springs, Billies Bay, Juniper Prairie, and Little Lake George would be managed as wilderness with trails (DFC 0.2).

Research Area: Genetic Resource Management Area (DFC 2.3).

Special Interest Areas: Alexander Springs Scenic Area, Blackwater Swamp, Bowers Bluff, Cat Head Pond, Davenport Landing, Lake Charles, Mormon Branch, Mud Lake, and Redwater Lake (DFC 3.1).

Hardwood/Cypress: Most hardwood/cypress would be suitable for timber production (DFC 5.2).

Red-cockaded Woodpecker: There would be three RCW HMAs (DFC 6.1). In the north, the area would include Kerr Island, Norwalk Island, Riverside Island, and Salt Springs Island. In the west, the entire western portion of the longleaf/slash pine forest would be included. In the south, the area would include the Paisley area.

Longleaf/Slash Pine Management: The forest would continue to have the current patch size structure. Inside an HMA (DFC 6.1), rotation ages would be 120 years for longleaf pine and 100 years for slash pine, with a maximum opening size of 25 acres. Outside an HMA (DFC 6.4), rotation ages would be 60 to 80 years in longleaf and slash pine, with a maximum opening size of 80 acres.

Sand Pine Management: In sand pine (DFC 8.3), the maximum clearcut would be 120 acres. Artificial regeneration, especially using genetically improved seed, would be encouraged.

Motorized Access Policy:

Motorized vehicles could travel cross-country in an open area.

Motorized vehicles could travel on unmarked travelways in an open area.

Some roads would be scheduled for closure.

Ocala National Forest
Alternative B
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Alexander Springs, Billies Bay, Little Lake George, and Juniper Prairie (extended to State Highway 19 in the northeast corner) would be wilderness with trails (DFC 0.2).

Wild and Scenic Rivers: Alexander Springs Creek and Juniper Creek (DFC 0.3).

Research Areas:

Ancient Island, Mormon Branch, and Mud Lake would be managed as RNAs (DFC 2.1).

Genetic Resource Management Area (DFC 2.3).

Special Interest Areas: Alexander Springs Scenic Area, Blackwater Swamp, Bowers Bluff, Davenport Landing, Disappearing Creek, Farles Prairie, Lake Charles, North Prairie, Redwater Lake (enlarged), Sellers Lake, Silver Glen Springs, and Zay Prairie (DFC 3.1). Silver Glen Springs would be converted from a developed recreation area to a special interest area (DFC 3.1).

Recreational Areas:

Hopkins Prairie and the area north of River Forest would be managed for minimum development, motorized use (DFC 4.2).

Hardwood/Cypress: Hardwood/cypress would be unsuitable for timber production (DFC 5.1).

Red-cockaded Woodpecker: RCW HMAs (DFC 7.1) would include Kerr Island, the Paisley area, Riverside Island, and Salt Springs Island.

Longleaf/Slash Pine Management: The forest would move toward a diverse patch size structure (DFCs 7.1 and 7.3). Except for on-site slash pine regeneration and longleaf pine restoration, regeneration patches usually would be small (¼-2 acres) for the next 20 years.

Sand Pine Management: Maximum clearcut would be 160 acres. Natural regeneration would be encouraged (DFC 8.2).

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

Motorized vehicles could travel on marked trails that are designated for their use.

Some roads would be scheduled for closure.

Ocala National Forest
Alternative C
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Billies Bay and Little Lake George would be managed as trailless wilderness (DFC 0.1). Alexander Springs and Juniper Prairie would be managed as wilderness with trails (DFC 0.2).

Research Areas: Genetic Resource Management Area (DFC 2.3).

Special Interest Areas: Alexander Springs Scenic Area, Blackwater Swamp, Bowers Bluff, Cat Head Pond, Davenport Landing, Lake Charles, Mormon Branch, Mud Lake, and Redwater Lake (DFC 3.1).

Recreational Areas: The area surrounding Sellers Lake and Farles Prairie would be managed for minimum development, motorized use (DFC 4.2).

Hardwood/Cypress: Most hardwood/cypress would be suitable for timber production (DFC 5.2).

Red-cockaded Woodpecker: RCW HMAs (DFC 6.1) would include Kerr Island, the Paisley area, Riverside Island, and Salt Springs Island.

Longleaf/Slash Pine Management: The forest would continue to have the current patch size structure. Inside an HMA (DFC 6.1), rotation ages would be 120 years for longleaf pine and 100 years for slash pine, with a maximum opening size of 25 acres. Outside an HMA (DFC 6.4), rotation ages would be 60 to 80 years for longleaf pine and slash pine, with a maximum opening size of 80 acres.

Sand Pine Management: Maximum clearcut would be 160 acres. Natural regeneration would be encouraged (DFC 8.2).

Motorized Access Policy:

Motorized vehicles could travel cross-country in an open area.

Motorized vehicles could travel on unmarked travelways in an open area.

No roads would be scheduled for closure.

Ocala National Forest
Alternative D
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Billies Bay would be managed as trailless wilderness (DFC 0.1). Little Lake George would be expanded and managed as trailless wilderness (DFC 0.1). Alexander Springs and Juniper Prairie would be expanded and managed as wilderness with trails (DFC 0.2).

Wild and Scenic Rivers: Alexander Springs Creek and Juniper Creek (DFC 0.3).

Research Area: Genetic Resource Management Area (DFC 2.3).

Special Interest Areas: Alexander Springs Scenic Area, Blackwater Swamp, Bowers Bluff, Cat Head Pond, Davenport Landing, Disappearing Creek, Farles Prairie, Lake Charles, Mormon Branch, Mud Lake, North Prairie, Penner Ponds, Redwater Lake, Sellers Lake, and Zay Prairie (DFC 3.1).

Recreational Areas:

Hopkins Prairie would be managed for minimum development, nonmotorized use (DFC 4.1).

Bottomlands along major rivers would be managed for minimum development, motorized use (DFC 4.2), as would the area north of River Forest.

An area near the western boundary and an area near the eastern boundary would be managed for low recreational development (DFC 4.3).

Hardwood/Cypress: Hardwood/cypress would be unsuitable for timber production.

Red-cockaded Woodpecker: RCW HMAs (DFC 6.1) would include Kerr Island, the Paisley area, Riverside Island, and Salt Springs Island.

Longleaf/Slash Pine Management: The forest would continue to have the current patch size structure. Inside an HMA (DFC 6.1), rotation ages would be 120 years for longleaf and 100 years for slash pine, with a maximum opening size of 25 acres. Outside an HMA (DFC 6.3), rotation ages would remain the same, but maximum opening size would be 40 acres.

Sand Pine Management: Ancient Island would be managed with a maximum clearcut of 320 acres, and natural regeneration would be emphasized (DFC 8.1). Most of the forest would be managed with a maximum clearcut of 120 acres and artificial regeneration would be encouraged (DFC 8.3). Two scrub-jay management areas would be managed as oak scrub, primarily for the use of scrub-jays (DFC 8.4).

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

Motorized vehicles could travel on marked trails that are designated for their use.

This alternative would designate a higher density of motorized trails than Alternatives B and E. Some trails would only be open during hunting season.

Some roads would be scheduled for closure.

Ocala National Forest
Alternative E
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Billies Bay and Little Lake George would be managed as trailless wilderness (DFC 0.1). Alexander Springs and Juniper Prairie (expanded along the eastern boundary to State Highway 19) would remain as wilderness with trails (DFC 0.2). Sweetwater Cabin would be out of the wilderness.

Wild and Scenic Rivers: Alexander Springs Creek and Juniper Creek (DFC 0.3)

Research Area: Genetic Resource Management Area (DFC 2.3).

Special Interest Areas: Bowers Bluff, Davenport Landing, Disappearing Creek, Lake Charles, Mormon Branch (with the eastern part removed), Mud Lake, North Prairie, and Redwater Lake (enlarged) (DFC 3.1).

Recreational Areas:

Farles Prairie, Hopkins Prairie, an area near Lake Jumper, an area along the St. Johns River, and Zay Prairie would be managed for minimum development, motorized use (DFC 4.2).

Blackwater Swamp would be managed for low recreational development (DFC 4.3).

Alexander Springs Scenic Area and Sellers Lake would be managed for moderate recreational development (DFC 4.4).

Hardwood/Cypress: These would be unsuitable for timber production (DFC 5.1).

Red-cockaded Woodpecker: RCW HMAs (DFC 7.1) would include Kerr Island, the Paisley area, Riverside Island, and Salt Springs Island.

Longleaf/Slash Pine Management: The forest would move toward a diverse patch size structure (DFCs 7.1 and 7.3). Except for on-site slash pine regeneration and longleaf pine restoration, regeneration patches usually would be small (¼-2 acres) for the next 20 years.

Sand Pine Management: Ancient Island would be managed with a maximum clearcut of 320 acres and natural regeneration would be emphasized (DFC 8.1). Most of the forest would be managed with a maximum clearcut of 160 acres using artificial and natural regeneration (DFC 8.2). One scrub-jay management area would be managed as oak scrub for the primary use of the scrub-jay (DFC 8.4).

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

A system of trails will be planned for each forest. After the trail system is established (approximately 2 years after plan approval), motorized vehicles and bicycles would have to stay on designated trails or open, numbered roads in some areas of the forest. In other areas of the forest, motorized vehicles and bicycles could travel on unmarked travelways in addition to open, numbered roads and designated trails.

Some roads would be scheduled for closure.

Osceola National Forest
Alternative A
Management Highlights

Congressionally Designated Areas:

Wilderness Area: Big Gum Swamp would be managed as wilderness with trails (DFC 0.2).

Wilderness Study Area: Natural Area (DFC 0.4).

Research Areas:

Natural Area RNA (DFC 2.1).

Experimental Forest (DFC 2.2).

Recreational Areas:

Impassable Bay would be managed for minimum development, motorized use (DFC 4.2).

Olustee Battlefield would be managed for moderate recreational development (DFC 4.4).

Hardwood/Cypress: Most hardwood/cypress would be suitable for timber production.

Red-cockaded Woodpecker: The entire forest would be within the RCW HMA (DFCs 6.1 and 6.2).

Longleaf/Slash Pine Management: The forest would continue to have the current patch size structure. The RCW guidelines would set the parameters (DFCs 6.1 and 6.2).

Range: Cattle grazing would be permitted on most of the forest (DFC 6.2).

Motorized Access Policy:

Motorized vehicles could travel cross-country in an open area.

Motorized vehicles could travel on unmarked travelways in an open area.

Some roads would be scheduled for closure.

Osceola National Forest
Alternative B
Management Highlights

Congressionally Designated Area:

Wilderness Area: Big Gum Swamp would be managed as wilderness with trails (DFC 0.2).

Remote Wetlands: Impassable Bay and the central swamp of the Pinhook would be managed as remote wetlands (DFC 1.1).

Research Areas:

Fanny Bay and Natural Area would be managed as research natural areas (DFC 2.1).

Experimental Forest (DFC 2.2).

Special Interest Areas: Deep Creek, Drew Grade Oak Hammock, the Middle Prong of the St. Mary's River (including the headwaters), and Otter Bay (DFC 3.1).

Recreational Area: Olustee Battlefield would be managed for moderate recreational development (DFC 4.4).

Hardwood/Cypress: Hardwood/cypress would be unsuitable for timber production.

Red-cockaded Woodpecker: Most of the forest would be within the RCW HMA (DFCs 7.1 and 7.2), except Pinhook Swamp (DFC 7.3).

Longleaf/Slash Pine Management: The forest would move toward a diverse patch size structure (DFCs 7.1, 7.2, and 7.3). Except for on-site slash pine regeneration and longleaf pine restoration, regeneration patches usually would be small (¼-2 acres) for the next 20 years.

Range: Cattle grazing would be permitted north of Interstate 10 and east of State Highway 250 (DFC 7.2).

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

Motorized vehicles could travel on marked trails that are designated for their use.

Some roads would be scheduled for closure.

Osceola National Forest
Alternative C
Management Highlights

Congressionally Designated Area:

Wilderness Areas: Big Gum Swamp would be managed as wilderness with trails (DFC 0.2).

Research Areas:

Natural Area RNA (DFC 2.1).

Experimental Forest (DFC 2.2).

Special Interest Area: Fanny Bay (DFC 3.1).

Recreational Area: Olustee Battlefield would be managed for moderate recreational development (DFC 4.4).

Hardwood/Cypress: Most hardwood/cypress would be suitable for timber production (DFC 5.2).

Red-cockaded Woodpecker: Most of the forest would be within the RCW HMA (DFCs 6.1 and 6.2), except Pinhook Swamp (DFC 6.4).

Longleaf/Slash Pine Management: The forest would continue to have the current patch size structure. Within the HMA (DFCs 6.1 and 6.2), rotation ages would be 120 years for longleaf pine and 100 years for slash pine, with a maximum opening size of 25 acres. Outside the HMA (DFC 6.4), rotation ages would be 60 to 80 years for longleaf and slash pine, with a maximum opening size of 80 acres.

Range: Cattle grazing would be permitted north of Interstate 10 and east of State Highway 250 (DFC 6.2).

Motorized Access Policy:

Motorized vehicles could travel cross-country in an open area.

Motorized vehicles could travel on an unmarked travelway in an open area.

No roads would be scheduled for closure.

Osceola National Forest
Alternative D
Management Highlights

Congressionally Designated Areas:

Wilderness Areas: Big Gum Swamp and Natural Area would be managed as wilderness with trails (DFC 0.2). A portion of Pinhook would be managed as trailless wilderness (DFC 0.1).

Research Areas:

Natural Area RNA (DFC 2.1).

Experimental Forest (DFC 2.2).

Special Interest Areas: Fanny Bay and the Middle Prong of the St. Mary's River (below the Natural Area WSA) (DFC 3.1).

Recreational Areas:

Impassable Bay and Otter Bay would be managed for minimum development, nonmotorized use (DFC 4.1). Roads in these areas would be closed to the public.

Olustee Battlefield would be enlarged and managed for a moderate level of recreational development (DFC 4.4).

The entire area surrounding Ocean Pond would be managed for developed recreation emphasis (DFC 4.5).

Hardwood/Cypress: Hardwood/cypress would be unsuitable for timber production.

Red-cockaded Woodpecker: Most of the forest would be within the RCW HMA (DFCs 6.1 and 7.1), except Pinhook Swamp (DFC 6.3).

Longleaf/Slash Pine Management: A portion of the forest would continue to have to the current patch size structure (DFC 7.1). The rest of the forest would move toward a diverse patch size structure. Rotation ages would be 120 years for longleaf and 100 years for slash pine, with a maximum opening size of 25 acres (DFCs 6.1 and 6.3).

Range: Cattle grazing would not be permitted.

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

Motorized vehicles could travel on marked trails that are designated for their use.

This alternative would designate a higher density of motorized trails than Alternatives B and E. Some trails would be only open during hunting season.

Some roads would be scheduled for closure.

Osceola National Forest
Alternative E
Management Highlights

Congressionally Designated Area:

Wilderness Areas: Big Gum Swamp would be managed as wilderness with trails (DFC 0.2).

Remote Wetlands: The central swamp of Pinhook (DFC 1.1).

Research Areas:

Natural Area RNA (DFC 2.1).

Experimental Forest (DFC 2.2).

Special Interest Areas: Drew Grade Oak Hammock, Fanny Bay, and the lower part of the Middle Prong of the St. Mary's River (DFC 3.1).

Recreational Areas:

Otter Bay would be managed for minimum development, nonmotorized use (DFC 4.1).

Impassable Bay would be managed for minimum development, motorized use (DFC 4.2).

Olustee Battlefield would be enlarged and managed for a moderate level of recreational development (DFC 4.4).

Ocean Pond campground would be enlarged (DFC 4.5).

Hardwood/Cypress: Hardwood/cypress would be unsuitable for timber production.

Red-cockaded Woodpecker: Most of the forest would be within the RCW HMA (DFCs 7.1 and 7.2), except Pinhook Swamp (DFC 7.3).

Longleaf/Slash Pine Management: The forest would move toward a diverse patch size structure (DFCs 7.1, 7.2, and 7.3). Except for on-site slash pine regeneration and longleaf pine restoration, regeneration patches usually would be small (¼-2 acres) for the next 20 years.

Range: Cattle grazing would be permitted north of Interstate 10 and east of State Highway 250 (DFC 7.2). Allotments vacant for 5 consecutive years would be discontinued.

Motorized Access Policy:

Cross-country motorized travel would not be permitted.

A system of trails will be planned for each forest. After the trail system is established, (approximately 2 years after plan approval), motorized vehicles and bicycles would have to stay on designated trails or open, numbered roads in some areas of the forest.

In other areas of the forest, motorized vehicles and bicycles could travel on unmarked travelways in addition to designated trails and open, numbered roads.

Some roads would be scheduled for closure.

Desired Future Condition Comparisons

Table 2.1 shows the percent of land allocated to each DFC by alternative.

Table 2.1

Percent of Land Allocated to Desired Future Condition

Apalachicola National Forest					
	Alternatives				
	A	B	C	D	E
Recently Purchased	1.05	—	—	—	—
0.1 Trailless Wilderness	—	—	1.43	4.25	1.43
0.2 Wilderness with Trails	5.70	6.65	4.25	2.40	5.22
0.3 Wild and Scenic River	1.17	3.22	1.17	3.22	3.22
0.4 Wilderness Study Area	.97	—	—	—	—
2.1 Research Natural Area	.09	4.04	.09	.34	.58
3.1 Special Interest Area	.81	.45	.85	4.82	.58
4.1 Minimum Development, Nonmotorized	—	—	—	1.80	—
4.2 Minimum Development, Motorized	—	—	—	5.60	—
4.3 Low Recreational Development	—	2.41	—	.40	—
4.4 Moderate Recreational Development	—	3.12	—	2.94	2.88
4.5 Developed Recreation Area	.13	.13	.13	.13	.13
5.2 Hardwood/Cypress, Timber Production	3.97	—	3.97	—	—
6.1 Longleaf/Slash Pine, RCW Management	78.19	—	79.85	37.36	—
6.2 Longleaf/Slash Pine, RCW Management, Cattle	7.72	—	7.69	—	—
6.5 Energy Wood	—	—	.37	—	—
7.1 Longleaf/Slash Pine, Adaptive Management, RCW Management	—	72.10	—	36.54	65.40
7.2 Longleaf/Slash Pine, Adaptive Management, RCW Management, Cattle	—	7.68	—	—	7.68
9.2 Forest/Urban Interface	—	—	—	—	12.68
9.3 Choctawhatchee Lands	.20	.20	.20	.20	.20
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

RCW - red-cockaded woodpecker

Table 2.1 (cont.)

Ocala National Forest					
	Alternatives				
	A	B	C	D	E
0.1 Trailless Wilderness	—	—	1.61	1.77	1.61
0.2 Wilderness with Trails	7.41	7.41	5.80	5.96	5.89
0.3 Wild and Scenic River	—	.61	—	.61	.61
2.1 Research Natural Area	—	5.07	—	—	—
2.3 Genetic Resource Management Area	.02	.02	.02	.02	.02
3.1 Special Interest Area	3.16	2.45	3.16	3.46	1.42
4.1 Minimum Development, Nonmotorized	—	—	—	.36	—
4.2 Minimum Development, Motorized	—	.83	1.32	3.68	1.45
4.3 Low Recreational Development	—	—	—	6.37	.36
4.4 Moderate Recreational Development	—	—	—	—	1.04
4.5 Developed Recreation Area	.36	.33	.36	.36	.37
5.1 No Hardwood/Cypress Timber Production	—	4.74	—	—	4.47
5.2 Hardwood/Cypress, Timber Production	4.57	—	4.55	—	—
6.1 Longleaf/Slash Pine, RCW Management	20.26	—	9.35	9.32	—
6.3 Longleaf/Slash Pine, No RCW Management	—	—	—	10.62	—
6.4 Longleaf/Slash Pine, No RCW Management, Short Rotation	5.98	—	16.23	—	—
7.1 Longleaf/Slash Pine, Adaptive Management, RCW Management	—	9.33	—	—	9.34
7.3 Longleaf/Slash Pine, Adaptive Management, No RCW Management	—	15.16	—	—	15.28
8.1 Sand Pine, Natural Regeneration, Large Openings	—	—	—	4.53	3.87
8.2 Sand Pine, Mixed Regeneration, Moderate Openings	—	52.56	56.11	—	52.29
8.3 Sand Pine, Artificial Regeneration, Small Openings	56.75	—	—	49.47	—
8.4 Scrub-Jay Management Area	—	—	—	2.14	.49
9.1 Pinecastle Bombing Range	1.49	1.49	1.49	1.33	1.49
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

RCW - red-cockaded woodpecker

Table 2.1 (cont.)

Osceola National Forest					
	Alternatives				
	A	B	C	D	E
Recently Purchased	8.87	—	—	—	—
0.1 Trailless Wilderness	—	—	—	8.87	—
0.2 Wilderness with Trails	7.19	7.19	7.19	9.47	7.19
0.4 Wilderness Study Area	2.28	—	—	—	—
1.1 Remote Wetland	—	11.54	—	—	8.87
2.1 Research Natural Area	.20	.34	.20	.20	.20
2.2 Experimental Forest	1.45	1.45	1.45	1.45	1.45
3.1 Special Interest Area	—	1.71	.14	.48	.50
4.1 Minimum Development, Nonmotorized	—	—	—	4.89	.66
4.2 Minimum Development, Motorized	2.66	—	—	—	2.66
4.4 Moderate Recreational Development	.15	.15	.15	.36	.36
4.5 Developed Recreation Area	.05	.05	.05	1.75	.14
5.2 Hardwood/Cypress, Timber Production	—	—	12.20	—	—
6.1 Longleaf/Slash Pine, RCW Management	11.56	—	51.96	39.20	—
6.2 Longleaf/Slash Pine, RCW Management, Cattle	65.59	—	18.11	—	—
6.3 Longleaf/Slash Pine, No RCW Management	—	—	—	8.55	—
6.4 Longleaf/Slash Pine, No RCW Management, Short Rotation	—	—	8.55	—	—
7.1 Longleaf/Slash Pine, Adaptive Management, RCW Management	—	50.90	—	24.78	51.30
7.2 Longleaf/Slash Pine, Adaptive Management, RCW Management, Cattle	—	18.11	—	—	18.11
7.3 Longleaf/Slash Pine, Adaptive Management, No RCW Management	—	8.56	—	—	8.56
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

RCW - red-cockaded woodpecker

Table 2.1 (cont.)

All Three Forests	Alternatives				
	A	B	C	D	E
Recently Purchased	2.03	—	—	—	—
0.1 Trailless Wilderness	—	—	1.25	4.20	1.26
0.2 Wilderness with Trails	6.51	6.98	5.25	4.75	5.76
0.3 Wild and Scenic River	.59	1.81	.59	1.81	1.81
0.4 Wilderness Study Area	.87	—	—	—	—
1.1 Remote Wetland	—	1.93	—	—	1.48
2.1 Research Natural Area	.07	3.77	.07	.20	.32
2.2 Experimental Forest	.25	.25	.25	.25	.25
2.3 Genetic Resource Management Area	.01	.01	.01	.01	.01
3.1 Special Interest Area	1.45	1.33	1.49	3.64	.84
4.1 Minimum Development, Nonmotorized	—	—	—	1.84	.11
4.2 Minimum Development, Motorized	.44	.28	.44	4.03	.92
4.3 Low Recreational Development	—	1.21	—	2.32	.12
4.4 Moderate Recreational Development	.03	1.59	.03	1.53	1.85
4.5 Developed Recreation Area	.19	.18	.19	.47	.20
5.1 No Hardwood/Cypress Timber Production	—	1.57	—	—	1.49
5.2 Hardwood/Cypress, Timber Production	3.50	—	5.54	—	—
6.1 Longleaf/Slash Pine, RCW Management	47.77	—	51.72	28.17	—
6.2 Longleaf/Slash Pine, RCW Management, Cattle	14.81	—	6.87	—	—
6.3 Longleaf/Slash Pine, No RCW Management	—	—	—	4.98	—
6.4 Longleaf/Slash Pine, No RCW Management, Short Rotation	1.98	—	6.83	—	—
6.5 Energy Wood	—	—	.19	—	—
7.1 Longleaf/Slash Pine, Adaptive Management, RCW Management	—	47.65	—	22.51	44.40
7.2 Longleaf/Slash Pine, Adaptive Management, RCW Management, Cattle	—	6.86	—	—	6.86
7.3 Longleaf/Slash Pine, Adaptive Management, No RCW Management	—	6.48	—	—	6.52
8.1 Sand Pine, Natural Regeneration, Large Openings	—	—	—	1.51	1.29
8.2 Sand Pine, Mixed Regeneration, Moderate Openings	—	17.50	18.68	—	17.41
8.3 Sand Pine, Artificial Regeneration, Small Openings	18.90	—	—	16.47	—
8.4 Scrub-Jay Management Area	—	—	—	.71	.16
9.1 Pinecastle Bombing Range	.50	.50	.50	.50	.50
9.2 Forest/Urban Interface	—	—	—	—	6.34
9.3 Choctawhatchee Lands	.10	.10	.10	.10	.10
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

RCW - red-cockaded woodpecker

Table 2.2 shows common practices by DFC. The practices listed in Table 2.2 are not intended to include all possible practices. They are listed to give a comparison of how certain common practices apply to each DFC.

Table 2.2

Common Practices by Desired Future Condition

	DFC																													
	0.1	0.2	0.3	0.4	1.1	2.1	2.2	2.3	3.1	4.1	4.2	4.3	4.4	4.5	5.1	5.2	6.1	6.2	6.3	6.4	6.5	7.1	7.2	7.3	8.1	8.2	8.3	8.4	9.1	9.2	9.3
RECREATION																															
Open to Public	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Trails	N	Y	V	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N
Trail Use																															
Hiking	*	Y	V	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Canoe	*	Y	V	Y	Y	Y	*	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Horse	*	Y	V	Y	Y	N	Y	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Pedal Bicycle	*	N	V	Y	Y	N	Y	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Motor Vehicle	*	N	V	Y	Y	N	Y	*	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Trailheads																															
Minor	*	N	V	N	Y	N	Y	*	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Major	*	N	V	N	N	N	N	*	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Recreation Facilities	N	Y	V	Y	Y	Y	N	N	Y	V	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N
Picnic Areas	*	N	V	N	N	N	*	*	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Swimming Areas	*	N	V	N	N	N	*	*	V	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Rifle Ranges	*	N	N	N	N	N	*	*	N	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Shoreline Improvements	*	N	V	N	N	N	*	*	V	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Boat Access Sites																															
Primitive	*	Y	V	Y	Y	Y	*	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Rustic	*	N	V	N	N	Y	*	*	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Developed	*	N	V	N	N	N	*	*	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Camping in Undesignated Sites	Y	Y	Y	Y	Y	N	Y	N	V	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Camping Areas	N	Y	V	Y	N	N	N	N	V	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N
Level 1	*	Y	V	Y	*	*	*	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Level 2	*	N	V	N	*	*	*	*	V	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Level 3	*	N	V	N	*	*	*	*	V	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Level 4	*	N	N	N	*	*	*	*	N	N	N	N	N	Y	N	N	N	N	N	N	*	N	N	N	N	N	N	N	*	N	*
Level 5	*	N	N	N	*	*	*	*	N	N	N	N	N	Y	N	N	N	N	N	N	*	N	N	N	N	N	N	N	*	N	*

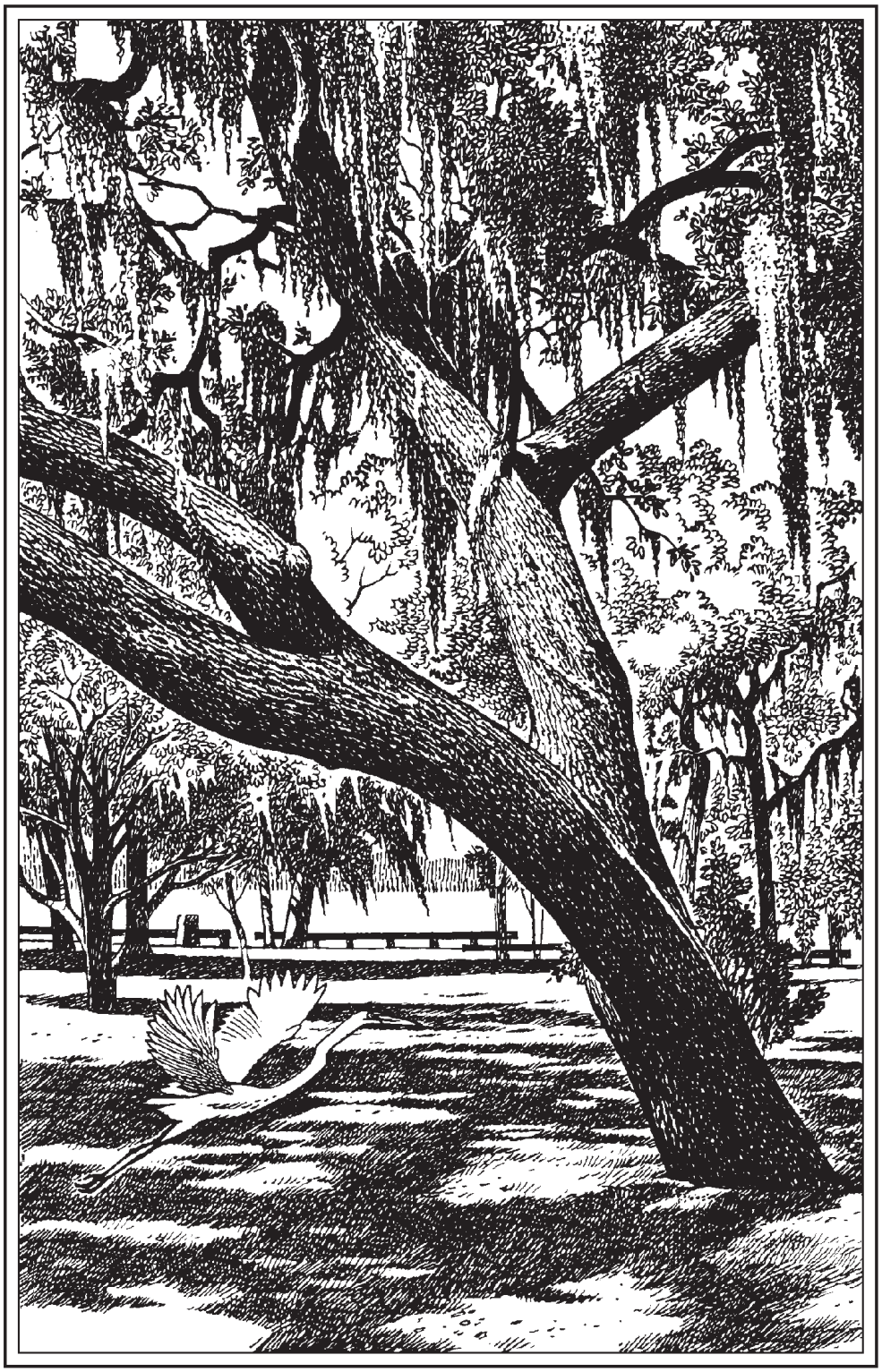
	DFC																													
	0.1	0.2	0.3	0.4	1.1	2.1	2.2	2.3	3.1	4.1	4.2	4.3	4.4	4.5	5.1	5.2	6.1	6.2	6.3	6.4	6.5	7.1	7.2	7.3	8.1	8.2	8.3	8.4	9.1	9.2	9.3
Interpretive Facilities	N	N	V	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N

DFC - desired future condition Y - Yes N - No V - varies from site to site

Table 2.2 (cont.)

	DFC																														
	0.1	0.2	0.3	0.4	1.1	2.1	2.2	2.3	3.1	4.1	4.2	4.3	4.4	4.5	5.1	5.2	6.1	6.2	6.3	6.4	6.5	7.1	7.2	7.3	8.1	8.2	8.3	8.4	9.1	9.2	9.3
WILDLIFE AND FISH																															
PETS Species Management	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wildlife Openings	N	N	V	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N
Noncultivated Wildlife Opening	*	*	V	*	Y	*	*	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	*	Y	*
Cultivated Wildlife Opening	*	*	V	*	N	*	*	*	V	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	N	*	Y	*
Artificial Structures for Non-PETS Species	N	N	V	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N
Fishery Management																															
Primitive Lakes	Y	Y	Y	Y	Y	Y	Y	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	*	Y	Y
Native Lakes	N	N	V	N	N	N	Y	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	*	Y	N
Fishery-Enhanced Lakes	N	N	V	N	N	N	N	*	N	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	*	Y	N
Developed Lakes	N	N	V	N	N	N	N	*	N	N	N	N	Y	Y	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	*	Y	N
Exotic Species Control	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
RANGE																															
Grazing	N	N	V	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N
Fertilizing and Seeding	*	*	V	*	*	N	*	*	N	*	*	*	*	*	*	*	*	Y	*	*	*	*	Y	*	*	*	*	*	*	*	*
Corrals, Troughs, etc.	*	*	V	*	*	N	*	*	N	*	*	*	*	*	*	*	*	Y	*	*	*	*	Y	*	*	*	*	*	*	*	*
PROTECTION																															
Cut and Remove for IPM	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VEGETATION																															
Exotic Species Control	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Special Products	N	N	V	N	N	N	Y	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N
Salvage	N	N	V	N	N	N	Y	Y	N	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N
Maintain/Restore Natural Vegetation	Y	Y	V	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Timber Production	N	N	V	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N
Hardwood Production	*	*	V	*	*	*	*	*	*	*	*	*	*	*	N	Y	N	N	N	N	Y	N	N	N	N	N	N	*	*	N	*
Rotation Age in Slash Pine	*	*	V	*	*	*	*	*	*	*	*	*	*	*	V	V	100	100	100	60	10	*	*	*	*	*	*	*	*	*	*
Rotation Age in Longleaf Pine	*	*	V	*	*	*	*	*	*	*	*	*	*	*	V	V	120	120	120	80	*	*	*	*	*	*	*	*	*	*	*
Emphasize Natural Regeneration	*	*	Y	*	*	*	*	*	*	*	*	*	*	*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	*	*	Y	*
Maximum Opening in Sand Pine	*	*	V	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	320	160	120	*	*	*	*

DFC - desired future condition Y - Yes N - No V - varies from site to site
PETS - proposed, endangered, threatened, or sensitive IPM - integrated pest management



CHAPTER 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Affected environment is the physical, biological, and socioeconomical components of the human environment that forest management may change. This chapter describes the current condition of these components and how they may be affected by implementing the various alternatives.

To achieve desired conditions of the alternatives, certain probable activities may occur. Location, design, and extent of such activities generally are not known or described in a Forest Plan. That is a site-specific (project-by-project) decision. Before implementing any of these activities, a site-specific environmental analysis will be conducted. The discussion in this chapter refers to the programmatic plan decisions affect on the environment.

Irreversible and irretrievable commitments of resources are not usually made at the programmatic level of a Forest Plan. Irreversible commitments are decisions affecting nonrenewable resources—such as soils, minerals, and heritage resources. Such commitments of resources are considered irreversible because the resource has been destroyed, has been removed, or has deteriorated to the point that renewal can occur only over a long period or at great expense. Actual commitment to develop, use, or affect nonrenewable resources is made at the project level.

Irretrievable commitments represent resource uses or opportunities that are forgone or cannot be realized during the planning period. These decisions are reversible, but production opportunities forgone are irretrievable. An example is the allocation of management prescriptions that do not allow timber harvests where trees could have been managed for timber production. For the period these allocations are made, the opportunity to produce timber from these areas is forgone. Irreversible and irretrievable commitments are not specifically identified in the discussions in this chapter.

Forest Plan implementing activities will be conducted in compliance with all laws, regulations, and policies governing activities on national forest land. Most of these regulations and policies contain direction for mitigation of environmental effects. Examples include the Clean Air Act, Coastal Zone Management Act, Endangered Species Act, National Historic Preservation Act, and Wilderness Act. Many of the standards and guidelines for the preferred alternative—outlined in the proposed revised Forest Plan, Chapter 3, ``Forestwide Standards and Guidelines," and Chapter 4,

``Management Area Goals, Desired Future Conditions, Standards, and Guidelines''—serve to mitigate the effects of management.

This chapter contains descriptions of the major resource components that reflect the issue areas listed in Chapter 1, ``Purpose and Need,'' and Appendix A, ``Summary of Public Involvement.'' This chapter is organized under three main sections. The ``Physical and Biological Environment'' section contains descriptions and effects on forest resources—such as air, soil, water, vegetation, wildlife, and fish. The ``Resource Management Programs'' section describes the current status and effects on resource uses and services provided—such as heritage, infrastructure, interpretive services, lands, minerals, protection, range, recreation, roadless areas, scenery, timber, wild and scenic rivers, and wilderness. The ``Socioeconomic Environment'' section describes the affected socioeconomic aspects of the forest environment—such as life-styles, employment, income, economic dependency, and diversity.

Physical and Biological Environment

Air

Affected Environment

National Ambient Air Quality Standards are set by the Environmental Protection Agency (EPA) to promote a level of air quality sufficient to protect public health and public welfare issues. Public welfare issues include forest and agricultural productivity, capital improvement protection, and maintenance of recreational opportunity. The Florida Department of Environmental Protection is responsible for inventory, monitoring, and regulation of air quality.

Areas that are known, or can be assumed, to meet air quality standards are divided into air quality classes. In Class I areas, very little additional air pollution is allowed. Bradwell Bay Wilderness (Apalachicola NF) is a Class I area, as are the designated wildernesses of St. Marks National Wildlife Refuge and Okefenokee National Wildlife Refuge. Class II areas allow a moderate level of additional air pollution to accommodate industrial/urban development. All other national forest lands in Florida are Class II. *National Forests in Florida* has consistently met the standards for the six EPA criteria pollutants monitored: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Specific air quality-related values have been identified for the Bradwell Bay Class I area. They are fresh air (lack of unnatural odor) and terrestrial ecosystem (vegetation).

Annual acid deposition in the form of sulfur compounds varies from 6 to 10 pounds per acre across the forests. Acid deposition from nitrogen compounds varies from 2 to 4 pounds per acre across the area. The National Stream Survey, conducted in 1986, showed that many sites within the Apalachicola and Ocala NFs had poor buffering capacity with a high risk of acidification of streams and lakes. A project for monitoring plant injury from tropospheric ozone on the forests was completed in 1996.

To date, prescribed burning has not been limited by air quality standards for particulate matter. There are no documented areas in rural Florida that do not meet air quality standards for particulate matter.

It is estimated that the average natural background visual range for the eastern United States varies from 65 miles to 121 miles. Average background visual range across the forests is estimated to vary from 16 miles to 19 miles. The bulk of this visibility degradation is due to sulfur emissions.

Environmental Consequences

Effects on air quality would be similar in all alternatives. Fire has far more affect on air quality than any other phenomenon that is apt to occur on the national forests in Florida. Smoke from wildland fires can affect human health and visibility along highways and at airports. The most effective way to reduce these hazards is to prescribe burn the forests, allowing smoke emissions to be spread out on a planned basis. All alternatives are

equally subject to wildland fires. They all propose the same regime of prescribed burning, an average of 158,000 acres each year. The greatest air quality concerns are particulate matter and carbon monoxide. During the first few years of prescribed burning, 9,000-13,000 tons per year of particulate matter less than 10 microns in diameter (PM < 10) likely would be produced. This would decrease to 6,000-9,000 tons per year as brushy understory is replaced by grasses. Similarly, 65,000-95,000 tons per year of carbon monoxide could be expected initially, falling to 45,000-65,000 tons per year. Fuel conditions and weather vary, so actual emissions may vary from these estimates. Prescribed burning would not cause violation of any current Federal air quality standard.

Prescribed burning would have the same affect on visibility in all alternatives. Visibility on the Class I airsheds of Bradwell Bay Wilderness, St. Marks National Wildlife Refuge, and Okefenokee National Wildlife Refuge could be affected by prescribed burning, but the effect would be minimal and brief. Where reduced visibility could create a safety hazard (e.g., along roads), prescribed burns would be designed to minimize this hazard. Similarly, prescribed burning should not affect commercial air traffic. On rare occasions, air traffic under Visual Flight Rules may be halted at Tallahassee Regional Airport.

Other activities within the alternatives would have minor effects on air quality. Timber harvest, recreational motorized access, construction and reconstruction of roads, and maintenance of roads and wildlife openings would add exhaust gases from equipment and vehicles, as well as dust from physical disturbance of soil. The gases and dust added would be of short duration and would add a very small portion to the cumulative emissions in the area. Harvesting temporarily would reduce the photosynthesis rate in the harvested area, briefly reducing the storage rate for atmospheric carbon. Cattle grazing would have a minor effect on the amount of methane in the immediate area.

Soil and Water

Affected Environment

Soil

An Order 2 soil survey has been completed on the national forest lands in Florida. About 70 different soil mapping units representing 57 soil series were identified. Soils range from deep sands with water tables below 80 inches to muck with water tables near the surface for most of the year. About 35 percent of the soils have water tables at or near the surface at some time during the year. Soil productivity ranges from 20 cubic feet of wood growth per acre per year on poorly drained flatwoods to 80 cubic feet per acre per year on deep, well-drained sands.

Soil productivity is maintained by minimizing erosion, compaction, and rutting. The latter is done by keeping heavy equipment off soils during wet conditions. Tolerable soil loss rates have been developed using the Region 8 *Guide for Calculating Accelerated Soil Loss for Forest Soils in the Southern Region*. A comparison of soil loss and sediment

yield rates with tolerable soil loss rates shows that soil loss from the national forest lands in Florida falls within acceptable limits.

Affected Environment

Water

The South Atlantic Gulf water resource region is subdivided into Administrative Watersheds, 13 are partially contained within the national forests in Florida (Table 3.1). Segments of 10 primary streams within these watersheds have been designated Outstanding Florida Waters (OFWs). This classification affords them the State of Florida's highest protection (*see* Table 3.1).

Table 3.1

Administrative Watersheds within the South Atlantic Gulf Water Resource Region

National Forest	Administrative Watershed	Major and Subwatersheds	Classification	
			Forest Service	State of Florida
Apalachicola	Apalachicola River	Apalachicola River	Multiple Use	OFW*
	Lost Creek	Lost Creek	Multiple Use	Class III
	New River	New River	Multiple Use	Class III
	Ochlockonee River	Ochlockonee River	Multiple Use	OFW*
	Sopchoppy River	Sopchoppy River	Multiple Use	OFW**
	Wakulla River	Wakulla River	Multiple Use	OFW
Ocala	St. Johns River	Alexander Springs	Multiple Use	OFW**
	St. Johns River	Juniper Springs	Wilderness	OFW**
	St. Johns River	Lake Dorr	Multiple Use	OFW
	St. Johns River	Lake Kerr	Multiple Use	OFW
	St. Johns River	Nine Mile Creek	Multiple Use	OFW
	St. Johns River	Ocklawaha River	Multiple Use	OFW*
	St. Johns River	St. Johns River	Multiple Use	OFW*
	St. Johns River	Salt Springs	Multiple Use	OFW
Osceola	Cedar Creek	Cedar Creek	Multiple Use	Class III
	Deep Creek	Deep Creek	Multiple Use	OFW**
	Falling Creek	Falling Creek	Multiple Use	OFW**
	Olustee Creek	Olustee Creek	Multiple Use	Class III
	Robinson Creek	Robinson Creek	Multiple Use	OFW**
	St. Mary's River	Middle Prong-St. Mary's River	Multiple Use	OFW**
	St. Mary's River	St. Mary's River	Multiple Use	OFW

*OFW designation effective within Forest Service boundaries as well as outside them, but not for entire stream.
**OFW designation effective only where stream occurs within Forest Service boundaries.
Note: Class III waters are for recreation and propagation of fish and wildlife.

The extent and type of surface water vary among the forests (Table 3.2). For example, the Apalachicola NF has 79 percent of the 854 miles of perennial streams and the Ocala NF has 85 percent of the 36,420 acres of lakes. The Osceola NF contains few miles of perennial streams and few acres of lakes but, like the Apalachicola NF, contains about 50 percent wetlands. The Ocala NF also contains six springs that exude from the Floridan aquifer and flow into the St. Johns River (Table 3.3).

All streams and lakes on the national forests in Florida that have been monitored meet State and Federal water quality standards. They are usually clear (secchi disk ≥ 2 meters), very soft (total hardness 5-15 mg/1 and total alkalinity ≤ 20 mg/1), acidic (pH 4-6), and low in phosphorus (total phosphorus 5-20 mg/m^3). Many are stained by tannic acids leached from the surrounding watersheds. Notable exceptions to this are springs whose waters exude from the Floridan aquifer. They are clear, colorless, hard, slightly basic, low in nutrients, and sometimes highly mineralized. The Sopchoppy River, considered representative of unaltered conditions, is used by the U.S. Geological Survey (USGS) as a hydrologic benchmark station.

Table 3.2

Water Resources within Three of the National Forests in Florida

National Forest	Perennial Stream		Lakes		Wetlands		Other Riparian Areas	
	Miles	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total
Apalachicola	671	79	2,735		280,017	64	17,436	59
Ocala	113	13	30,857	85	77,987	18	10,322	34
Osceola	70	8	2,828	8	79,798	18	2,033	7
TOTAL	**854**	**100**	**36,420**	**100**	**437,802**	**100**	**29,791**	**100**

Table 3.3

Average Discharge of Springs within the National Forests in Florida

Springs	Average Discharge		Magnitude**
	CFS*	Million Gallons per Day	
Alexander	120	77.4	First
Fern Hammock	16	10.3	Second
Juniper	13	8.4	Second
Salt	83	53.6	Second
Silver Glen	100	72.0	First
Sweetwater	Not Measured	Not Measured	Second (Probable)

*Cubic feet per second.
**First-magnitude springs discharge an average of more than 100 CFS; second-magnitude springs discharge an average of 10-100 CFS.
Source: Jack C. Rosenau et al., ``Springs of Florida,'' rev. ed., *Florida Bureau of Geology Bulletin* 31, Tallahassee, FL, 1977.

Wetlands, Riparian Areas, and Floodplains. In Florida, the national forests contain more than 437,712 acres of potential wetlands—as defined in Forest Service Manual (FSM) 2527, *Floodplain Management and Wetland Protection*—and almost 30,000 acres of riparian areas, as defined in FSM 2526, *Riparian Area Management* (*see* Table 3.2). By definition, wetland and riparian areas often overlap, distorting the totals in Table 3.2. Floodplain acres (100-year frequency) have not been estimated, a reliable resource base for doing this does not currently exist, but these would include many of the acres identified as potential wetland. Site-specific determinations of wetland, riparian, and flood-prone status are made when and where activities are proposed in an area.

Water Yield. Based on runoff models, USGS gauge records, and literature applicable to the area, total yield of water from the national forests in Florida (both surface water and groundwater) is estimated at 1.86 million acre-feet per year. Of the 54 inches of annual

precipitation, it is estimated that 25-35 percent (15 inches) is aquifer recharge on the Ocala NF and 65-75 percent (38 inches) is surface flow on the Apalachicola NF. The Osceola NF yields the least (13 inches), and most of this exits as streamflow.

Water Uses. Consumptive water use at national forest administrative sites, recreation areas, and special-use sites (summer homes, organization camps, and hunt clubs) is estimated at 25.6 million gallons or 78.6 acre-feet per year. These sites, except one (Sweetwater Cabin on the Ocala NF), use groundwater as the drinking water source. The highly productive Floridan aquifer underlies the national forests, so present and future water supplies are expected to be easily met.

Nonconsumptive instream water uses within the forests include recreational activities such as boating, fishing, and swimming. Inseparable from these are fish and wildlife habitat needs.

Water Management Districts set the consumptive-use and minimum instreamflow requirements.

Groundwater. Groundwater from the Floridan aquifer provides most of the drinking water. This water meets State and Federal drinking water standards without treatment. Future demands on the forests are expected to be easily met. Continued growth of Florida's population will begin to tax these water resources, possibly resulting in impacts to riparian ecosystems.

Environmental Consequences

Soil and Water

All alternatives envision increased levels of developed and dispersed recreation with resultant impacts to the water resources. Bacteria counts will increase at popular swimming beach sites. Construction of new roads, campgrounds, boat ramps, and other recreation facilities could cause increases in sedimentation to streams, lakes, and springs. Increased motorized boat traffic would cause increased lake and stream bank erosion. Water quality contamination would increase from vehicles, boats, and human waste. Lead leaching from rifle ranges may affect groundwater.

The restoration of Ocklawaha River (Rodman Reservoir), if initiated, would result in some sedimentation in the river, the St. Johns River, and several small submerged spring runs that are located on national forest land. Waste material dredged from the reservoir bottom and removed from the dam would be disposed of on national forest land. These impacts would be monitored closely throughout the project and mitigation measures applied as needed. Successful completion of this project—in a timely, environmentally safe manner—would require close coordination of all agencies and private groups involved. Forest Service personnel are working with the Rodman Restoration Design Team to ensure national forest lands are properly maintained.

Impacts of the Fishery Management Program on streams and lakes could result from aquatic vegetation and exotic fish control, fish population manipulation, and nutrient enrichment. These activities would be done on a site-specific basis and would not vary

with alternative. Any toxicants used for vegetation or fish control would be short-lived, would target only specific species, and would be used under controlled conditions. Impacts from nutrient enrichment, normally done in human-made ponds with no inflow or outflow, would be limited to those water bodies receiving treatment. Any natural lakes treated with lime or fertilizer would be done as part of an administrative study. Impacts of nutrient enrichment on populations of macrophytes, macroinvertebrates, birds, fish, and amphibians and on water chemistry could all be included in the study. These impacts would be limited mostly to those lakes receiving treatment and would not vary with alternative.

Prescribed burning would increase in all alternatives. Fire could have adverse effects on soil and water by increasing surface erosion and decreasing infiltration following removal of the surface organic layer. Burning may cause short-term changes in soil chemistry in the surface layers (top 4 inches of mineral soil) due to release of nutrients from the litter/humus as it is converted to ash. Some loss of nutrients by volatilization would occur but would be offset by increased availability in the surface ash. Loss of nutrients through surface runoff or increased leaching of soluble material may occur, temporarily altering water chemistry. Effects of fire are rarely cumulative, returning to preburn conditions within 1 to 2 years. Groundwater is rarely affected by fire.

Timber harvesting activities—including log skidding and decking and construction of temporary roads—may cause soil compaction and rutting that could change soil properties and alter surface hydrology. Soil physical properties may change depending on the type and weight of machinery used, tire size, soil type, number of times machinery passes over the same ground, soil moisture content, and vegetative material or amount of debris on the site during harvest. Harvesting activities also may create temporary increases in erosion and displace nutrients. The highest potential for adverse effects to the soil and water resources would be on hydric soils.

The primary effects on soil productivity and water quality from establishing regeneration occur during site-preparation activities. In general, mechanical site-preparation methods have a greater chance of causing negative effects on soil and water than other methods due to the amount of soil disturbance. The risk of compaction depends on the same variables as timber harvesting activities. Additional risks from nutrient displacement, erosion, sedimentation, soil heating, and nutrient leaching depend on the type of site preparation and the amount of area exposed. Nutrient displacement, soil compaction, and impacts to surface water and groundwater movement may result when areas are bedded, disked, raked, piled, or windrowed.

Herbicides and prescribed burning could be used as site-preparation tools. When used properly, both methods would cause few impacts to soil physical properties. Impacts of herbicides on water quality would vary between type of herbicide used, application rate, distance to water, and type of soil involved. For a detailed discussion on the effects of site preparation on soil and water, see Region 8 *Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont*, Volume I, Chapter IV, pp. 80-106.

All impacts from harvesting and reforestation are controlled or ameliorated by using forestwide standards and guidelines which include *Florida's 1993 Silviculture Best Management Practices* (BMPs). These control measures include careful planning of location and design of harvesting activities and limiting ground disturbance in and near lakes, springs, and streams, wetlands, and other sensitive areas. The Forest Plan expands the use of the primary zone and eliminates harvesting within it under most circumstances.

Other impacts to soil and water result from management measures used to control fire. Plowed firelines can collect water from long distances, discharging it and sediment into streams or wetlands. Firelines also can interrupt overland flow in riparian areas and transition zones, significantly altering hydrology of these areas. Standards and guidelines have been developed to limit these impacts. Using natural barriers, using roads, raking the forest floor, and using foam or wet lines is encouraged. Construction of firelines in or near wetlands, savannahs, and transition zones is discouraged.

Cattle grazing may affect both soil and water. In extreme cases, heavy grazing can reduce infiltration rates by more than 50 percent, increasing surface runoff, causing sedimentation in streams and lakes. Livestock with free access to water bodies can damage lake and stream banks and raise harmful bacteria levels, if animal wastes are dropped in or near the water's edge. The number of cattle grazing on the national forests in Florida has been dropping during the last 10 years and is expected to continue dropping. Although the number of cattle allowed varies with alternative, there are presently only 300 head, all located on the Apalachicola RD. As recently as 1987, there were more than 2,300 cattle on the national forests in Florida. Impacts from cattle grazing are localized and minimal from a forestwide perspective.

Exploration and extraction of minerals could cause significant impacts to soil and water. Any permit application for extraction of minerals on the national forest land in Florida would result in development of site-specific mitigation measures for protection of soil and water. This process would be the same for all alternatives.

Sediment is produced during logging and reforestation due to road maintenance and use, log skidding and decking, and site preparation. Annual sediment yield across the Southeast averages about 1.3 tons per acre, varying from about 0.05 tons per acre per year for forested land to 5.0 tons per acre per year for cultivated land. Factors that affect the amount of stream sediment generated by harvesting include, among other things, the amount and location of ground disturbance produced during logging and site preparation and the amount, intensity, and timing of precipitation. Due to the variable nature of sediment production during harvesting operations, attempts to predict sediment yield across a forest for a given period are highly speculative. Nonetheless, coefficients for sediment production by treatment type were developed for comparing estimates of sediment produced across the forests for each alternative during a 10-year period. Sediment yield by alternative, by period is displayed in Table 3.4.

Increased water yield results when evapotranspiration is reduced by harvesting or otherwise reducing forest vegetation. Coefficients were developed to estimate the increased water yield in acre-feet of water for each acre harvested by treatment type during a 10-year period. Table 3.5 shows water yield by alternative, by period.

Table 3.4

Sediment Yield
(Thousand Tons)

Period	Alternatives A	B	C	D	E
	Apalachicola National Forest				
1	8	18	48	15	24
2	13	17	46	15	24
3	29	15	41	23	34
4	34	22	29	17	38
5	20	13	34	12	28
	Ocala National Forest				
1	88	59	82	56	74
2	85	62	82	57	70
3	89	61	82	56	73
4	86	58	81	48	68
5	88	59	86	47	80
	Osceola National Forest				
1	2	1	19	2	6
2	3	1	21	3	10
3	6	2	19	7	10
4	6	3	16	5	10
5	5	4	15	7	6
	Combined Totals of Forests				
1	98	78	149	73	104
2	101	80	149	75	104
3	124	78	142	86	117
4	126	83	126	70	116
5	113	76	135	66	114

Table 3.5

Water Yield
(Thousand Acre-Feet)

Period	Alternatives A	B	C	D	E
	Apalachicola National Forest				
1	65	90	137	65	118
2	86	83	142	64	116
3	137	83	152	104	158
4	121	92	127	91	169
5	95	75	122	78	140
	Ocala National Forest				
1	245	169	224	158	204
2	245	177	225	159	197
3	256	174	230	160	201
4	257	170	228	146	196
5	254	172	241	140	169
	Osceola National Forest				
1	7	8	35	10	23
2	19	16	72	25	36
3	21	18	63	44	41
4	24	18	61	43	36
5	27	17	59	38	28

Table 3.5 (cont.)

Period	Alternatives A	B	C	D	E

	Combined Totals of Forests				
1	317	267	396	233	345
2	350	276	439	248	349
3	414	275	445	308	400
4	402	280	416	280	401
5	376	264	422	256	337

Alternative A. This alternative ranks third in the amount of road reconstruction (*see* Table 3.13) and second in the amount of open roads (*see* Figure 3.11). Road reconstruction and maintenance can be expected to cause some soil compaction, erosion, and sedimentation. Impacts to water resources could occur when construction is near lakes, springs, or streams. Borrow pit development for fill or clay material used in road construction and maintenance would result in areas of exposed soil several acres in size. Under most cases, there would be little or no off-site damage.

Motorized vehicles and bicycles would be permitted to travel cross-country, creating more chances for soil compaction, erosion, and rutting and sedimentation in streams and lakes than in alternatives restricting travel to designated roads and trails. Impacts would be greatest in areas with soils of high clay or organic content and in riparian areas around lakes, ponds, streams, and wetlands.

This alternative would allow harvesting of cypress and hardwood which have a high potential for adverse effects related to hydric soils. Timber harvesting causes an increase in water yield. This increase would be minimal and last only a few years. This alternative would result in the harvest of about 101,644 MCF of timber on 111,911 acres in the first 10-year period (*see* Tables 3.37 and 3.9).

Alternative A would allow the most cattle grazing on both the Apalachicola RD and Osceola NF (*see* Table 2.1). This alternative has the potential to cause the most impact on soil and water due to cattle grazing if the grazing allotments were fully utilized.

Alternative B. This alternative ranks fourth in the number of miles of road reconstruction (*see* Table 3.13) and fourth in the number of miles of open roads (*see* Figure 3.11). Impacts from reconstruction and maintenance would be similar to Alternative A.

Changes in national forest access policy would have impacts on soil and water, especially in areas with soils of high clay or organic content. This alternative restricts motorized access to designated roads and trails, limiting erosion, compaction, and rutting of soils and sedimentation in streams and lakes. Proper design, location, and maintenance of roads and trails would reduce these impacts in sensitive riparian areas around lakes, ponds, streams, and wetlands. This alternative would increase the acres of wilderness and research natural areas (RNAs) which limit use of motorized vehicles and reduce potential for damage to soil and water resources from motorized-vehicle-related activities.

This alternative would result in harvesting about 82,142 MCF of timber on 113,529 acres in the first 10-year period (*see* Tables 3.37 and 3.9). Effects would be similar to Alternative A, except more emphasis on group selection harvest would result in more small openings. Stands would be entered for harvest more often in group selection cuts.

Soil compaction and rutting would not be as extensive per entry in group selection harvests but could increase over time as stands are entered more often. This alternative emphasizes prescribed burning and herbicides for site preparation followed by natural regeneration. Hardwood/cypress would be unsuitable for timber production, resulting in less chance of damage on hydric soils.

Cattle grazing would be permitted on the Apalachicola RD and the Osceola NF (*see* Table 2.1). The area where grazing would be permitted is smaller than that in Alternative A, but with similar effects.

Alternative C. This alternative ranks second in the amount of road reconstruction (*see* Table 3.13) and first in the amount of open roads (*see* Figure 3.11). Impacts would be slightly higher than in Alternative A.

This alternative permits travel on both unmarked travelways and cross-country in addition to open, numbered roads and designated trails. Because this alternative would have the least restrictive access policy, it would have the most potential for damage to soil and water resources from motorized-vehicle-related activities.

Alternative C would result in harvesting about 138,038 MCF of timber on 126,582 acres in the first 10-year period (*see* Tables 3.37 and 3.9). Harvest and site-preparation methods used would be the same as in Alternative A, but the rotation age outside the red-cockaded woodpecker (RCW) habitat management area (HMA) would be shorter. Therefore, impacts on soil and water would be very similar to, but more frequent than in, Alternative A.

Cattle would be permitted on the Apalachicola RD and the Osceola NF (*see* Table 2.1). Effects would be similar to Alternative B.

Alternative D. This alternative ranks fifth in the miles of road reconstruction (*see* Table 3.13) and fifth in the miles of open roads (*see* Figure 3.11). Impacts from reconstruction and maintenance would be less than Alternative A, B, or C.

Alternative D would restrict motorized access to open, numbered roads and designated trails but would increase the number and miles of these trails compared to other alternatives, with effects similar to Alternative B. This alternative would have the greatest amount of wilderness and other nonmotorized areas. Therefore, it would have the least chance of damage to soil and water resources from motorized-vehicle-related activities (*see* Table 2.1). Cattle grazing would not be permitted.

This alternative would result in harvesting about 75,120 MCF of timber on 78,578 acres in the first 10-year period (*see* Tables 3.37 and 3.9). Hardwood/cypress would be unsuitable for timber production, reducing the chance of damage on hydric soils.

Alternative E. This alternative ranks first in road reconstruction (*see* Table 3.13) and ranks third in the amount of open roads (*see* Figure 3.11). Road reconstruction and maintenance can be expected to cause some soil compaction, erosion, and sedimentation. Impacts to water resources could occur when construction is near lakes, springs, or

streams. Borrow pit development for fill or clay material used in road construction and maintenance would result in areas of exposed soil several acres in size. Under most cases, there would be little or no off-site damage.

Access policy would be similar to Alternatives B and D, except that some areas would permit motorized and bicycle travel on unmarked travelways. This would not be as restrictive as in Alternatives B and D. The effects would be similar to those in Alternatives B and D in areas where motorized travel would be limited to open, numbered roads and designated trails, limiting erosion, compaction, and rutting of soils and sedimentation in streams and lakes. Proper design, location, and maintenance of roads and trails would reduce these impacts. In areas where travel is permitted on unmarked travelways, the effects would be similar to Alternatives A and C, creating more chances for soil compaction, erosion, and rutting and sedimentation. Impacts would be greatest in areas with soils of high clay or organic content and in riparian areas around lakes, ponds, streams, and wetlands. Acres of wilderness would increase under this alternative, thereby limiting motorized-vehicle use and reducing the number of acres where damage could occur.

This alternative would result in harvesting about 102,968 MCF of timber on 154,192 acres in the first 10-year period (*see* Tables 3.37 and 3.9). Effects would be similar to Alternative B, less than Alternatives A and C, and greater than Alternative D. Stands would be entered for harvest more often in group selection cuts. Soil compaction and rutting would not be as extensive per entry in group selection harvests, but they might increase over time as stands are entered more often. Since establishment of regeneration will utilize fire and some light ground scarification, potential soil and water impacts should be less than when conventional mechanical site-preparation methods are used. Hardwood/ cypress would be unsuitable for timber production; thus, there would be less chance of damage on hydric soils. Effects of not harvesting hardwood or cypress would be similar to Alternatives B and D.

Cattle grazing would be permitted on the Apalachicola RD and Osceola NF (*see* Table 2.1). The area of allotments would be the same as in Alternatives B and C. The difference would be that if an allotment was vacant for 5 consecutive years, it would be discontinued. This would result in a gradual phaseout of the range program if allotments are not utilized, lessening the effects of grazing on soil and water resources over the long-term for this and all other alternatives.

Vegetation

Affected Environment

The Forest Service manages approximately 4 percent of the land area of the State of Florida. The natural communities found on the Apalachicola, Ocala, and Osceola NFs are listed in Table 3.6, with the global and state rankings of each, as derived from the *Guide to the Natural Communities of Florida* (1990). The Forest Service is now engaged in a systematic survey to identify all natural communities on all national forests in the

Southeast. This study has not yet reached Florida, so the list in Table 3.6 should be considered preliminary.

Table 3.6

Natural Communities' Occurrence by Forest and Ranking of Imperilment

Community	Global Rank	State Rank	Apalachicola NF	Osceola NF	Ocala NF
Sandhill	Unknown	Imperiled	X	X	X
Scrubby Flatwoods	Rare	Rare			X
Mesic Flatwoods	Unknown	Secure	X	X	X
Wet Flatwoods	Unknown	Secure	X	X	X
Scrub	Imperiled	Imperiled			X
Xeric Hammock	Unknown	Rare	X	X	X
Upland Hardwood Forest	Unknown	Rare	X		
Slope Forest	Rare	Imperiled	X		
Hydric Hammock	Unknown	Secure			X
Baygall	Secure	Secure	X	X	X
Seepage Slope	Rare	Imperiled	X	X	X
Bottomland Forest	Secure	Secure	X	X	X
Floodplain Swamp	Unknown	Secure	X	X	X
Strand Swamp	Secure	Secure	X	X	X
Basin Swamp	Unknown	Secure	X	X	X
Dome Swamp	Secure	Rare	X	X	X
Wet Prairie	Unknown	Secure	X		X
Depression Marsh	Secure	Rare			X
Bog	Unknown	Rare	X	X	
Sinkhole	Unknown	Imperiled	X		X
Aquatic Cave	Rare	Imperiled	X		X
Flatwoods Lake	Secure	Rare	X	X	X
Swamp Lake	Secure	Imperiled	X	X	X
Sandhill Lake	Rare	Imperiled	X	X	X
Sinkhole Lake	Rare	Rare	X		X
Alluvial Stream	Secure	Imperiled	X		X
Blackwater Stream	Secure	Imperiled	X	X	X
Seepage Stream	Secure	Imperiled	X	X	X
Spring-run Stream	Imperiled	Imperiled	X		X

Note: X shows where these occur.
Source: *Guide to the Natural Communities of Florida* (Tallahassee, Florida: Florida Natural Areas Inventory and Florida Department of Natural Resources, 1990).

The closest measure of community types that the Forest Service maintains is an inventory of forest types. Table 3.7 shows the acres inventoried by forest type and grouped by community type in which the forest type occurs.

Table 3.7

Acres by Forest Type (includes old growth)

Apalachicola National Forest

Community Types—Sandhill, Scrubby Flatwoods, Mesic Flatwoods, Wet Flatwoods, Upland Longleaf Pine Forest, and Southern Wet Pine Forest

Forest Types	Acres
Longleaf Pine	135,084
Longleaf Pine/Slash Pine	268
Slash Pine	150,972
Slash Pine/Longleaf Pine	26
Slash Pine/Hardwood	13,282
Loblolly Pine	5,145
Loblolly Pine/Hardwood	1,888
Pond Pine	1,332
Pond Pine/Hardwood	653
Hardwood/Pond Pine	283

Table 3.7 (cont.)

Apalachicola National Forest (cont.)

Community Types—Dry to Moist Hardwood: Xeric Hammock, Upland Hardwood Forest, Slope Forest, Dry and Dry Mesic Oak/Pine Forest, and Coastal Plain Upland Mesic Hardwood Forest

Forest Types	Acres
Southern Red Oak/Pine	412
White Oak/Northern Red Oak/Hickory	532
Scrub Oak/Pine	589
Scrub Oak	3,519
Oak Hammock	104
Live Oak	739

Community Types—Forested Wetland: Hydric Hammock, Baygall, Seepage Slope, Bottomland Forest, Floodplain Swamp, Strand Swamp, Basin Swamp, Dome Swamp, Cypress/Tupelo Swamp Forest, and River Floodplain Hardwood Forest

Forest Types	Acres
Pond Cypress	16,080
Bald Cypress	101
Bald Cypress/Tupelo	29,058
Sweet Bay/Swamp Tupelo/Red Maple	40,736
Bottomland Hardwood/Pine	9,641
Swamp Chestnut Oak/Cherrybark Oak	389
Sweetgum/Nuttal Oak/Willow Oak	1,039
Laurel Oak/Willow Oak	1,583
Overcup Oak/Water Hickory	386
Undrained Flatwoods	4,487
Brush/Titi	135,820

Ocala National Forest

Community Types—Sandhill, Scrubby Flatwoods, Mesic Flatwoods, Wet Flatwoods, Upland Longleaf Pine Forest, and Southern Wet Pine Forest

Forest Types	Acres
Longleaf Pine	46,835
Slash Pine	35,271
Slash Pine/Hardwood	1,639
Loblolly Pine	370
Loblolly Pine/Hardwood	108
Pond Pine	6,520
Pond Pine/Hardwood	1,053
Hardwood/Pond Pine	1,101

Community Type—Scrub

Forest Types	Acres
Sand Pine	206,143
Scrub Oak	11,461

Community Types—Dry to Moist Hardwood: Xeric Hammock, Upland Hardwood Forest, Slope Forest, Dry and Dry Mesic Oak/Pine Forest, and Coastal Plain Upland Mesic Hardwood Forest

Forest Types	Acres
White Oak/Black Oak/Pine	636
Oak Hammock	1,211
Live Oak	1,557

Table 3.7 (cont.)

Ocala National Forest (cont.)

Community Types—Forested Wetland: Hydric Hammock, Baygall, Seepage Slope, Bottomland Forest, Floodplain Swamp, Strand Swamp, Basin Swamp, Dome Swamp, Cypress/Tupelo Swamp Forest, and River Floodplain Hardwood Forest

Forest Types	Acres
Pond Cypress	24
Bald Cypress/Tupelo	3,604
Sweet Bay/Swamp Tupelo/Red Maple	25,382
Bottomland Hardwood/Pine	620
Swamp Chestnut Oak/Cherrybark Oak	20
Sweetgum/Nuttal Oak/Willow Oak	378
Laurel Oak/Willow Oak	1,399
Sugarberry/Elm/Green Ash	48
Undrained Flatwoods	104

Osceola National Forest

Community Types—Sandhill, Scrubby Flatwoods, Mesic Flatwoods, Wet Flatwoods, Upland Longleaf Pine Forest, and Southern Wet Pine Forest

Forest Types	Acres
Longleaf Pine	19,389
Longleaf Pine/Slash Pine	2,648
Slash Pine	79,052
Slash Pine/Longleaf Pine	2,163
Slash Pine/Hardwood	9,358
Loblolly Pine	191
Loblolly Pine/Hardwood	44
Pond Pine	15
Hardwood/Pond Pine	4,082

Community Types—Dry to Moist Hardwood: Xeric Hammock, Upland Hardwood Forest, Slope Forest, Dry and Dry Mesic Oak/Pine Forest, and Coastal Plain Upland Mesic Hardwood Forest

Forest Types	Acres
Northern Red Oak/Hickory/Pine	19
White Oak/Black Oak/Pine	92
Scrub Oak	68
Live Oak	34

Community Types—Forested Wetland: Hydric Hammock, Baygall, Seepage Slope, Bottomland Forest, Floodplain Swamp, Strand Swamp, Basin Swamp, Dome Swamp, Cypress/Tupelo Swamp Forest, and River Floodplain Hardwood Forest

Forest Types	Acres
Bald Cypress	2,902
Bald Cypress/Tupelo	33,554
Sweet Bay/Swamp Tupelo/Red Maple	6,659
Bottomland Hardwood/Pine	3,092
Laurel Oak/Willow Oak	72
Undrained Flatwoods	673
Brush/Titi	9,829

Table 3.7 (cont.)

All Three Forests

Community Types—Sandhill, Scrubby Flatwoods, Mesic Flatwoods, Wet Flatwoods, Upland Longleaf Pine Forest, and Southern Wet Pine Forest

Forest Types	Acres
Longleaf Pine	201,308
Longleaf Pine/Slash Pine	2,916
Slash Pine	265,295
Slash Pine/Longleaf Pine	2,189
Slash Pine/Hardwood	24,279
Loblolly Pine	5,706
Loblolly Pine/Hardwood	2,040
Pond Pine	7,867
Pond Pine/Hardwood	1,706
Hardwood/Pond Pine	5,466

Community Types—Scrub

Forest Types	Acres
Sand Pine	206,143
Scrub Oak	11,461

Community Types—Dry to Moist Hardwood: Xeric Hammock, Upland Hardwood Forest, Slope Forest, Dry and Dry Mesic Oak/Pine Forest, and Coastal Plain Upland Mesic Hardwood Forest

Forest Types	Acres
Northern Red Oak/Hickory/Pine	19
Southern Red Oak/Pine	412
White Oak/Black Oak/Pine	728
White Oak/Northern Red Oak/Hickory	532
Scrub Oak/Pine	589
Scrub Oak	3,587
Oak Hammock	1,315
Live Oak	2,330

Community Types—Forested Wetland: Hydric Hammock, Baygall, Seepage Slope, Bottomland Forest, Floodplain Swamp, Strand Swamp, Basin Swamp, Dome Swamp, Cypress/Tupelo Swamp Forest, and River Floodplain Hardwood Forest

Forest Types	Acres
Pond Cypress	16,104
Bald Cypress	3,003
Bald Cypress/Tupelo	66,216
Sweet Bay/Swamp Tupelo/Red Maple	72,777
Bottomland Hardwood/Pine	13,353
Swamp Chestnut Oak/Cherrybark Oak	409
Sweetgum/Nuttal Oak/Willow Oak	1,417
Laurel Oak/Willow Oak	3,054
Overcup Oak/Water Hickory	386
Sugarberry/Elm/Green Ash	48
Undrained Flatwoods	5,264
Brush/Titi	145,649

Sandhill, Scrubby Flatwoods, Mesic Flatwoods, and Wet Flatwoods. These four communities are all dominated by longleaf pine. They form a continuum across a moisture gradient from very dry sandhills through scrubby and mesic flatwoods to wet flatwoods. The different communities are identified by the plants and animals associated with the longleaf pine forest. However, since longleaf pine and its associated fire regime (growing-season fires with a return interval of 2-5 years) impose certain similarities on the communities, they are considered together here. These communities have been strongly modified by human activities in the last century, so estimations of the ``natural'' conditions depend on historical records. Different interpretations exist concerning these records, especially relating to the natural condition. There is no scientific consensus on this condition, and there are still many unknowns. Such records include reports from Bartram (1791), Nash (1895), Schwarz (1907), Harper (1911), Chapman (1923), and Wahlenberg (1946). Together, these sources paint a picture of an open, airy pine forest with an understory of grasses, herbs, and subshrubs. The understory can be remarkably diverse despite an initial impression of uniformity. Schwarz (1907, p. 9.) takes the reader for a walk through a virgin longleaf pine forest:

> Ordinarily the stand of trees does not maintain its uniformity over more than a few hundred acres; often it changes abruptly even within fifty acres. We may enter a stand of mature timber, with trees from 90 to 120 feet in height and with ample spaces here and there in the crown cover, giving entrance to the light from overhead. After walking only a few hundred paces, we may find the trees suddenly beginning to close up their crown spaces. They grow smaller and more numerous, until presently they form a tolerably dense grove; and then they open up once more into the original stand of mature, tall trees . . . dense groves of poles and tall saplings, though of constant occurrence in the virgin longleaf forest, are usually not over half an acre in extent, and in the aggregate form but a small part of the total area.

The forest described here differs from the longleaf pine forests currently found on the national forests in Florida in several significant ways. First, about 25 percent of the acres that would have grown the fire-resistant longleaf pine are now growing slash pine. Slash pine is another native species. Historically it would been more restricted to wet areas, where it could escape fire during its fire-sensitive first decade of life. Slash pine would normally mix with longleaf pine in wet flatwoods, but fire suppression has allowed it to dominate this as well as some of the drier communities. The acres of off-site slash pine were estimated using soil drainage classes. Off-site slash pine can be placed in two categories: severely off-site (found on well-drained soils) and potentially off-site (found on somewhat poorly drained soils). It is estimated that there are approximately 14,000 acres of severely off-site slash pine and 44,000 acres of potentially off-site slash pine on the Apalachicola NF, approximately 8,000 acres of severely off-site slash pine and 12,000 acres of potentially off-site slash pine on the Ocala NF, and approximately 32,000 acres of potentially off-site slash pine on the Osceola NF. The process of removing the slash pine and regenerating longleaf pine (called *longleaf pine restoration*) has begun, but it can be expected to take many years to complete. Fire suppression also has allowed the understory to gain stature. Instead of ``low and parklike,'' it can be 5-30 feet tall, even forming a midstory dominated by woody shrubs and small trees—such as titi and turkey oak.

National Forests in Florida now has an active prescribed burning program; because of this it has won national recognition. The understory-opening effects are becoming apparent, though several more decades of it will be required to make the longleaf pine forest look familiar to Schwarz. A third difference in the understory is that much of it has been mechanically disturbed since Schwarz's time. Much of the fire suppression was accomplished using plowed firelines and much of the slash pine regeneration was accomplished by plowing up raised beds on which to grow the seedlings. The native understory is sensitive to such soil disturbance, because it is slow-growing, long-lived perennials that rarely reproduce from seed (Evans, Carr, and Boyle, 1993). Recolonization of disturbed areas must occur by slow ingrowth from undisturbed areas. Data on the status of the understory have not been collected routinely. Therefore, it is not possible to quantify the number of acres so disturbed. Public concern makes it an important issue in the revision of the Forest Plan.

Age distribution of the overstory pines is another way that current forest conditions differ from the historical forest. Schwarz described forests where 120-250 year old longleaf pines were common. The few remaining patches of such forests confirm this (Chapman, 1923; Platt et al., 1988). Figure 3.1 illustrates in graph form the biological situation of large numbers of seedlings becoming established and then dying off at a more-or-less constant rate throughout the next 200-300 years. At any one time, one finds many small trees and ever-fewer larger trees, and a few very large, old trees. The current age distributions of longleaf and slash pine are shown in Figure 3.2. The most striking difference is the virtual absence of trees older than 100 years; that is, half the age range found historically is gone, making the current forests almost adolescent in character. Most of the forests were cut several times prior to Federal ownership; and the older trees present today regenerated from stands cut from 1900 to 1935. It is safe to assume that all those community members who especially use the older age classes must be rather stressed. The red-cockaded woodpecker provides a well-studied example. By contrast, community members who specialize on the sapling and early mature stages currently may be more abundant than they would have been in the historical forests. On the Apalachicola and Osceola NFs, the age distribution is also distinctly two-peaked. Trees 50 to 80 years old are common, as are trees 5 to 30 years old (trees 5-30 years old make up about 40 percent of the forest on these forests), but the middle age range of 30 to 50 is uncommon. This directly reflects historical peaks and valleys in harvesting and planting.

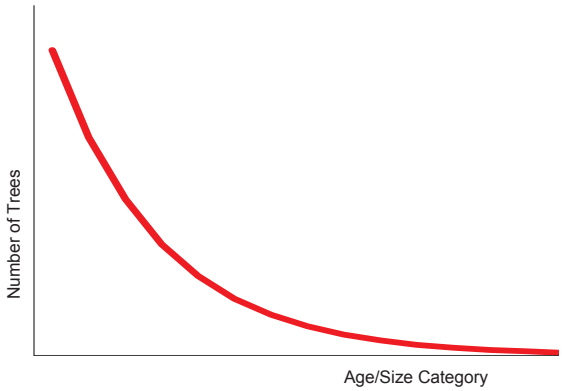
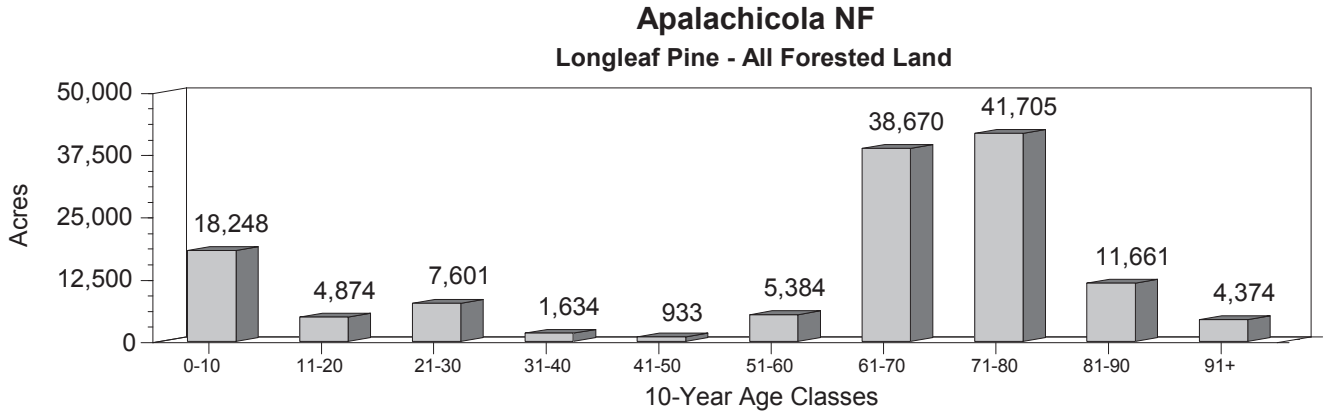
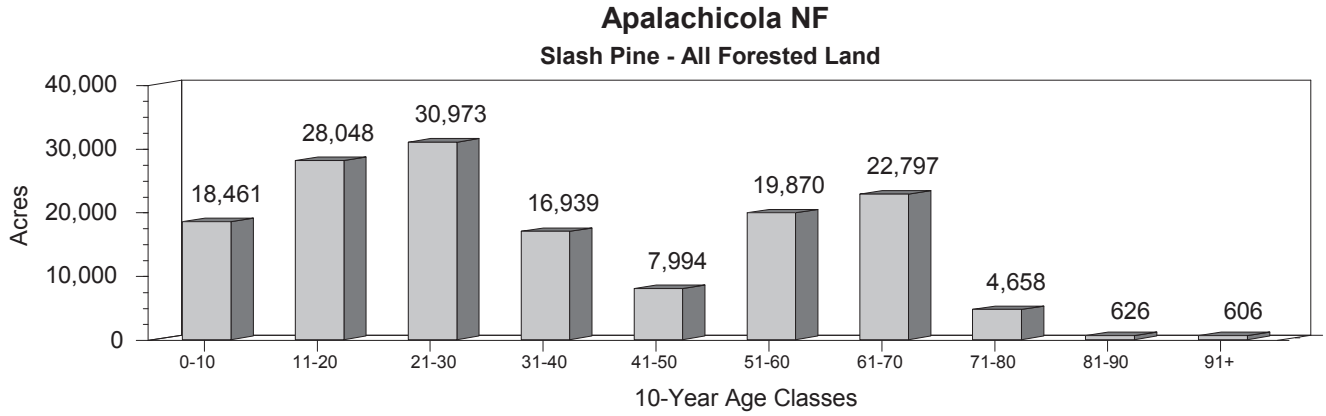
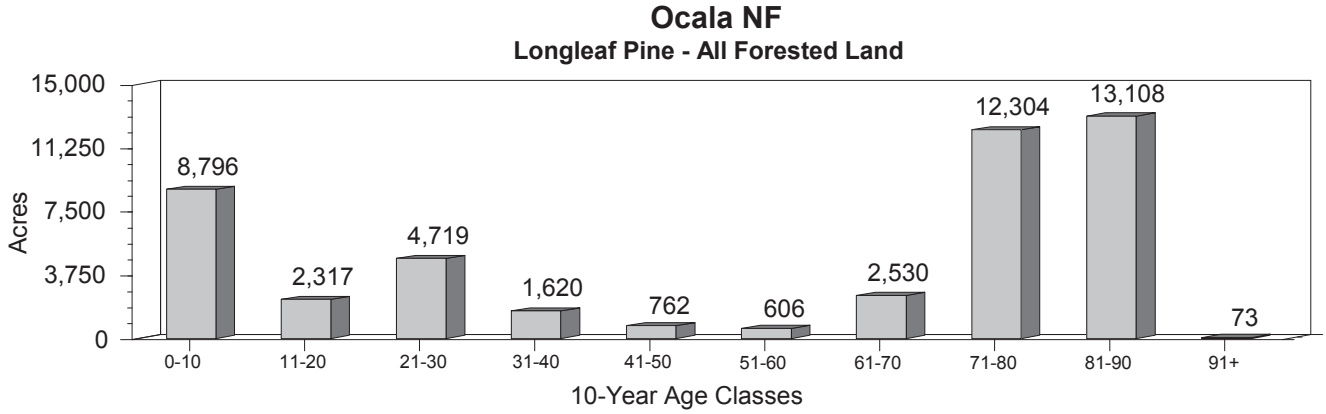
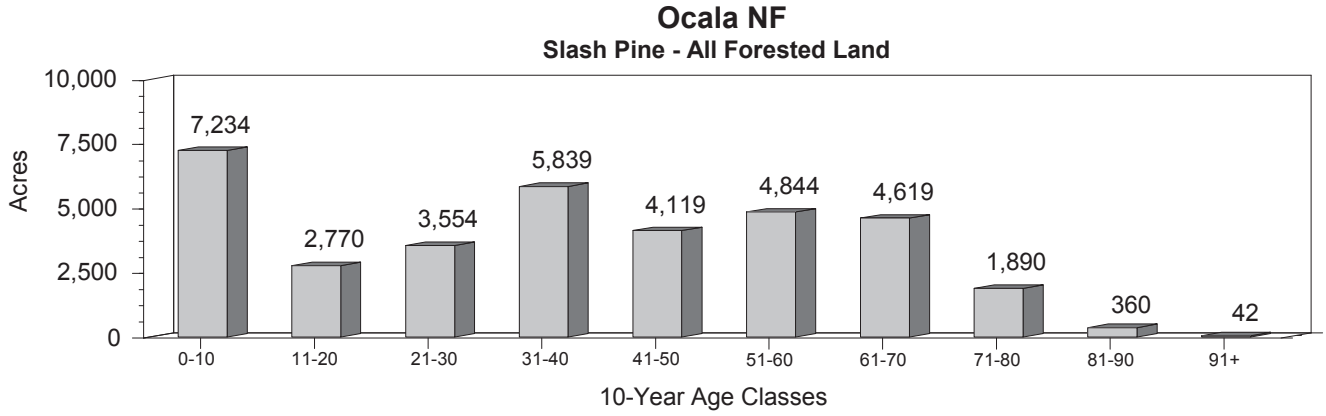


Figure 3.1. Generalized Reverse-J Curve.


Apalachicola NF
Longleaf Pine - All Forested Land
Acres
50,000
37,500
25,000
12,500
0
18,248
4,874
7,601
1,634
933
5,384
38,670
41,705
11,661
4,374
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91+
10-Year Age Classes


Apalachicola NF
Slash Pine - All Forested Land
Acres
40,000
30,000
20,000
10,000
0
18,461
28,048
30,973
16,939
7,994
19,870
22,797
4,658
626
606
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91+
10-Year Age Classes


Ocala NF
Longleaf Pine - All Forested Land
Acres
15,000
11,250
7,500
3,750
0
8,796
2,317
4,719
1,620
762
606
2,530
12,304
13,108
73
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91+
10-Year Age Classes


Ocala NF
Slash Pine - All Forested Land
Acres
10,000
7,500
5,000
2,500
0
7,234
2,770
3,554
5,839
4,119
4,844
4,619
1,890
360
42
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91+
10-Year Age Classes

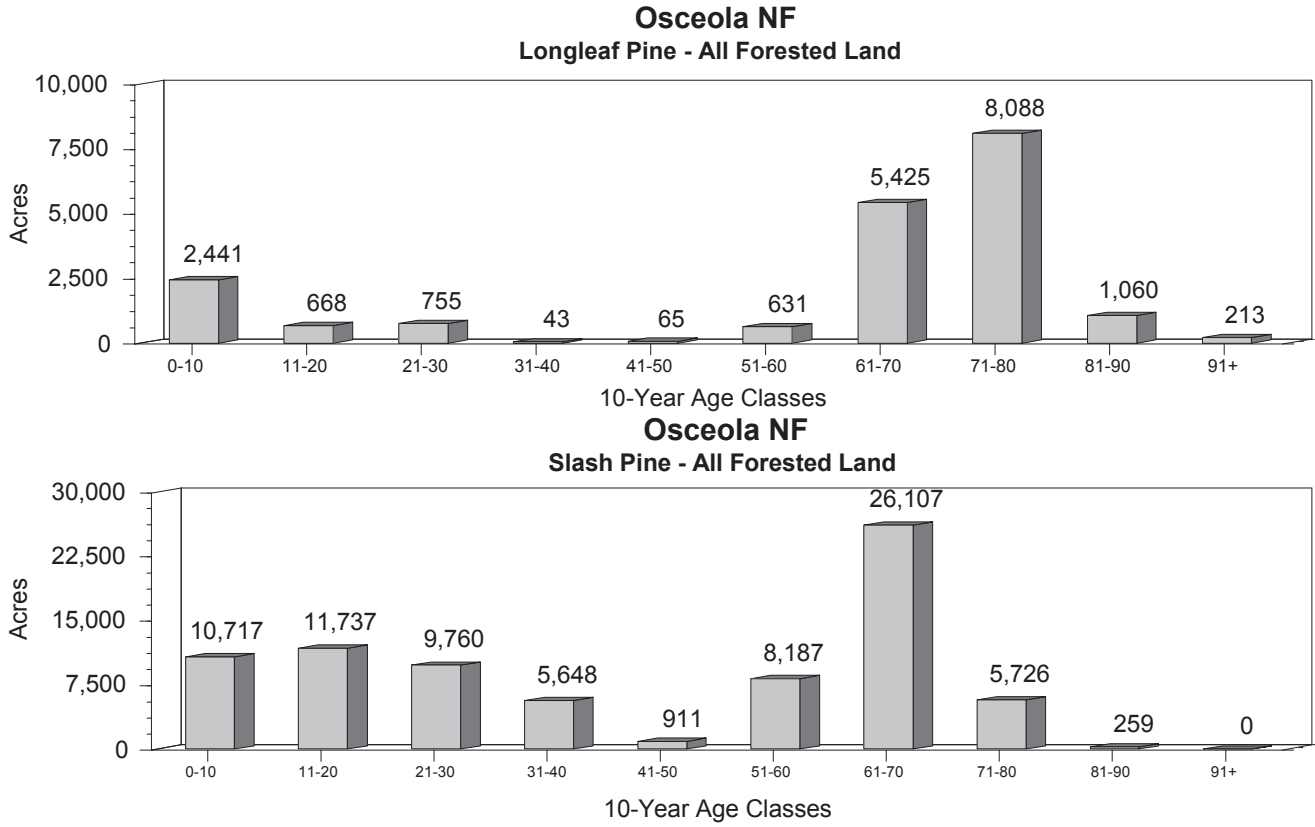


Figure 3.2. Current Age Class Distribution of Longleaf and Slash Pine.

Yet another difference between the current longleaf pine forests on the national forests in Florida and the historical forests is that of the spatial patterning. Wahlenberg (1946) described the pattern of the longleaf pine forest this way:

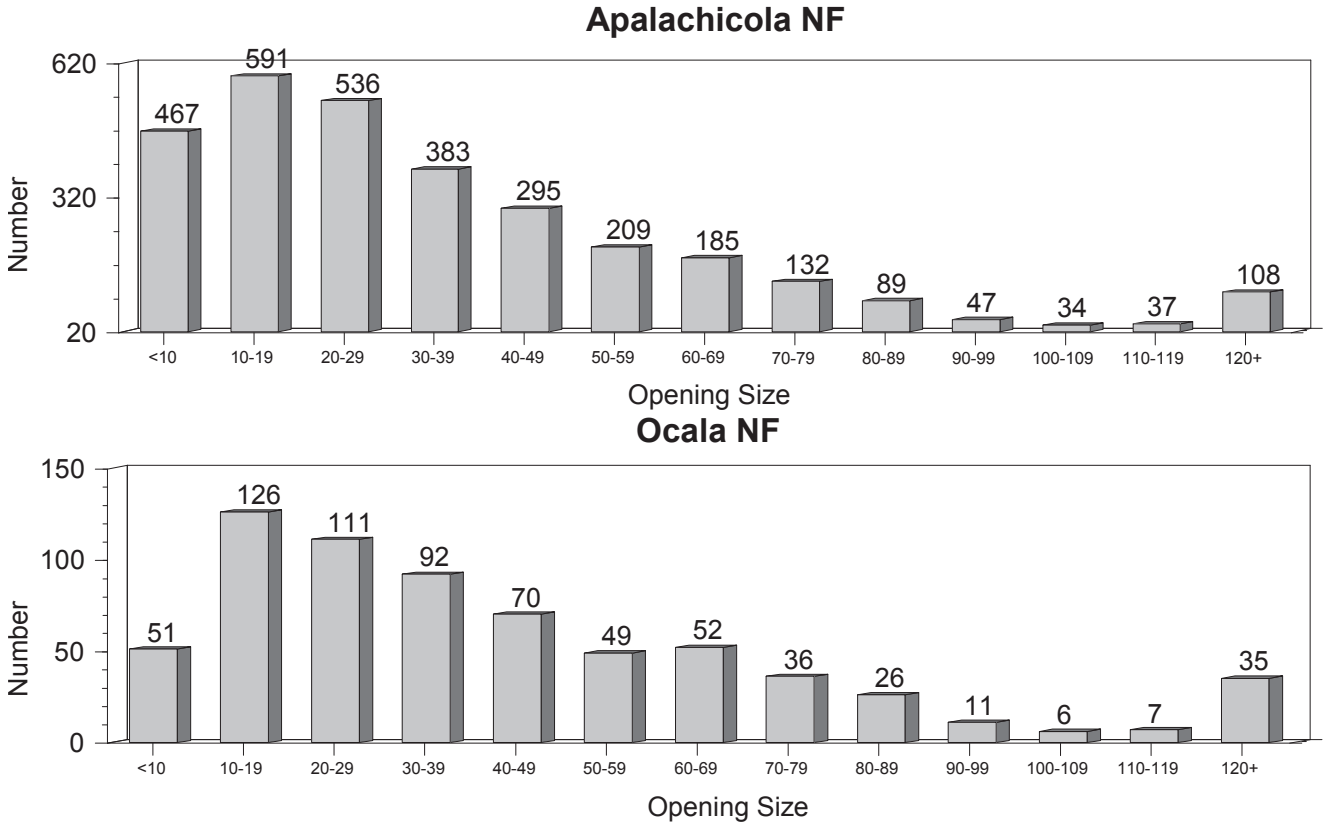
> [Longleaf pine] reproduced itself only where openings in the overwood permitted young stands to develop. . . . [The resulting forest was] characterized by scattered even-aged stands of trees, each usually covering an area ranging from a few hundred square feet to several or many acres.

As Wahlenberg notes, it is the spatial pattern of overstory mortality—size distribution of openings—that determines the size distribution of longleaf pine groves of the next generation. Detailed historical descriptions (e.g., Schwarz, 1907) and more recent long-term studies (e.g., Platt and Rathbun, 1993) agree with the foresters' common experience that there are generally two important sources of natural mortality to longleaf pine. These are lightning/insect infestations and damage from windstorms. Platt and Rathbun (1993) estimate that the former accounts for about a third of the mortality and the latter about half. Lightning/insect infestations, rarely more than an acre or two in size, are localized deadenings, where beetles kill trees that have been weakened by a lightning strike.

The openings created by windstorms are much more variable in size, ranging from the windthrow of a single tree to the hundreds of acres thrown by the eye wall of the

Category 4 Hurricane Hugo. This event was dramatic but also very unusual. Hooper and McAdie's (1993) review of wind damage to longleaf pine forests makes it clear that most hurricane damage is caused by 2-4 second high-energy bursts of wind that leave windthrown trees very patchily distributed across the forest (*also see* Bray, 1901; Curtis, 1943; Derr and Enghardt, 1957; Flory, 1960; Hurst, 1965; Wilkinson et al., 1978; and USDA, 1992). For example, the eye wall of the Category 1 Hurricane Kate passed over the Apalachicola NF and acted like a large thinning. Only one of the openings it created was greater than 1 acre; it was 25 acres. Together, these sources suggest that the reverse-J shaped curve could also approximate the size distribution of even-aged patches in the historical longleaf pine forest, with patches an acre or smaller more common and larger size patches less common. By contrast, the current patch structure on the national forests in Florida has been shifted by the practice of creating harvest openings usually more than 30 acres.

Figure 3.3 shows the current distribution of opening sizes of longleaf and slash pine stands. It shows that about 49 percent of the even-aged patches (stands) are larger than 30 acres, these may have been rare in the historic forests. The patch-size distribution is important to the natural community, because most community members use forest patches of certain ages but not other ages. As a forest patch grows, those species invade and use it for a time and are then eliminated as the patch grows beyond the age of usefulness to them. Every time one of these species dies in one patch, its dispersing units need to find another patch that is at the right stage. Distance to the next appropriate patch can then become critical to the success of that species.



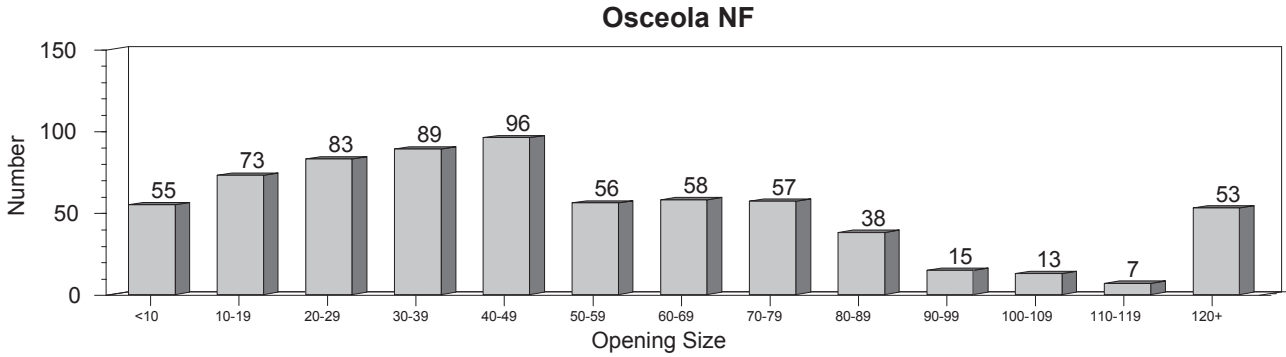


Figure 3.3. Current Distribution of Opening Sizes for Longleaf/Slash Pine < 40 Years Old.

Many species native to longleaf pine communities—including the several salamander species found in flatwoods and such perennial plants as *Macbridea*, *Genetiana*, *Lilium*, and *Linum*—do not have the pronounced dispersive phases found in organisms adapted to move easily from one temporary patch to another some distance away. Instead, their relative nondispersiveness is more characteristic of species adapted to life in a habitat where, for thousands of years, the scale of disturbance has been small. This is consistent with the typically small patch structure described in the historical literature. The current larger scale of patch structure can be expected to stress such organisms (Bergon, Harper, and Townsend, 1986; Means, 1995). This change in spatial scale is what ecologists call *fragmentation*. The current predominance of larger patches have fragmented the forest (Reinman et al., 1993).

Scrub. The 212,000-acre Big Scrub on the Ocala NF is the largest remaining parcel in the world of the imperiled scrub community. This community has a canopy of sand pine over a shrub understory. Shrubs include several species of oaks, rosemary, rusty lyonia, and palmetto. Scrub is a high-disturbance system that depends on catastrophic events for its continued existence (Myers and Ewel, 1990). Under natural conditions, any given acre of scrub would burn to the ground every 20-80 years. Such wildfires often would have been hundreds to thousands of acres in size. When the fire passed, the sand pine would regenerate quickly from seeds and shrubs resprout from the roots. Most other members of the community specialize on using patches in certain age ranges of this cycle. Several herbaceous species, for example, would germinate and bloom in the first decade after the fire, then get shaded out as the woody plants close the canopy above them. The herbs would then either disperse seeds into other newly burned patches or lay as dormant seeds or roots for the next several decades until this patch burns again (Hartnett and Richardson, 1989). Similarly, there are mosses and liverworts that live only in the older (more than 50 years old) sand pine trees. They would be killed by the fire, so their long-term survival depended on dispersing spores into other patches as those patches age (Equihua, 1989). The Forest Service suppresses wildland fires in the scrub because of the catastrophic nature of these fires. That mechanism for generating the natural cycle has been much altered. The Forest Service has replaced it with clearcuts, which have a rather similar effect. Most of the above-ground vegetation is harvested or broken, which then quickly regenerates by seed and sprouts. The species composition of the scrub community appears to have remained intact despite this switch from wildfire to clearcut

as the source of regenerating patches. Indeed, it is the lack of catastrophic events that would destroy this community.

The current age class distribution of the sand pine is shown in Figure 3.4. There are no stands older than 80 years, appropriate for this species. By that age, sand pine is dying of old age. The current age class distribution is probably a reasonable approximation of historic scrub, since such a reverse-J shape would result from wildfires and storms occurring at a more-or-less constant but low rate. The peaks in the 50-70 year age classes are the result of several large fires in the 1930s, including a world-record fire that burned 50,000 acres in a few hours. There are, however, several aspects of Forest Service sand pine management that may be subtly altering the community compared to its historic condition. They are the removal of trees from the site, importing (from other parts of the same forest) of extra sand pine seeds to encourage sand pine regeneration on a clearcut site, and choice of sizes/shapes of clearcut openings. The removal of trees from the site removes some nutrients as well as the structure that the fire-killed tree trunks would have provided.

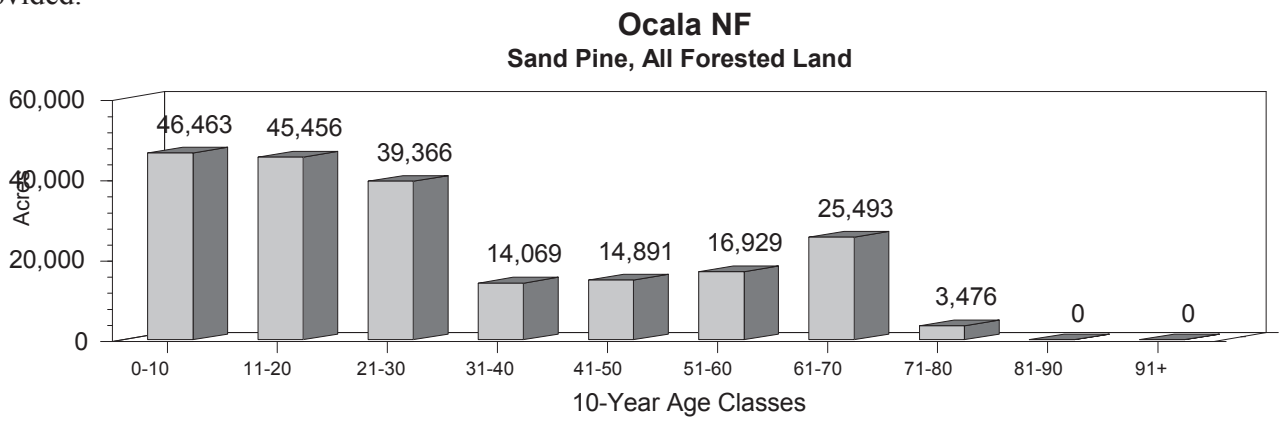


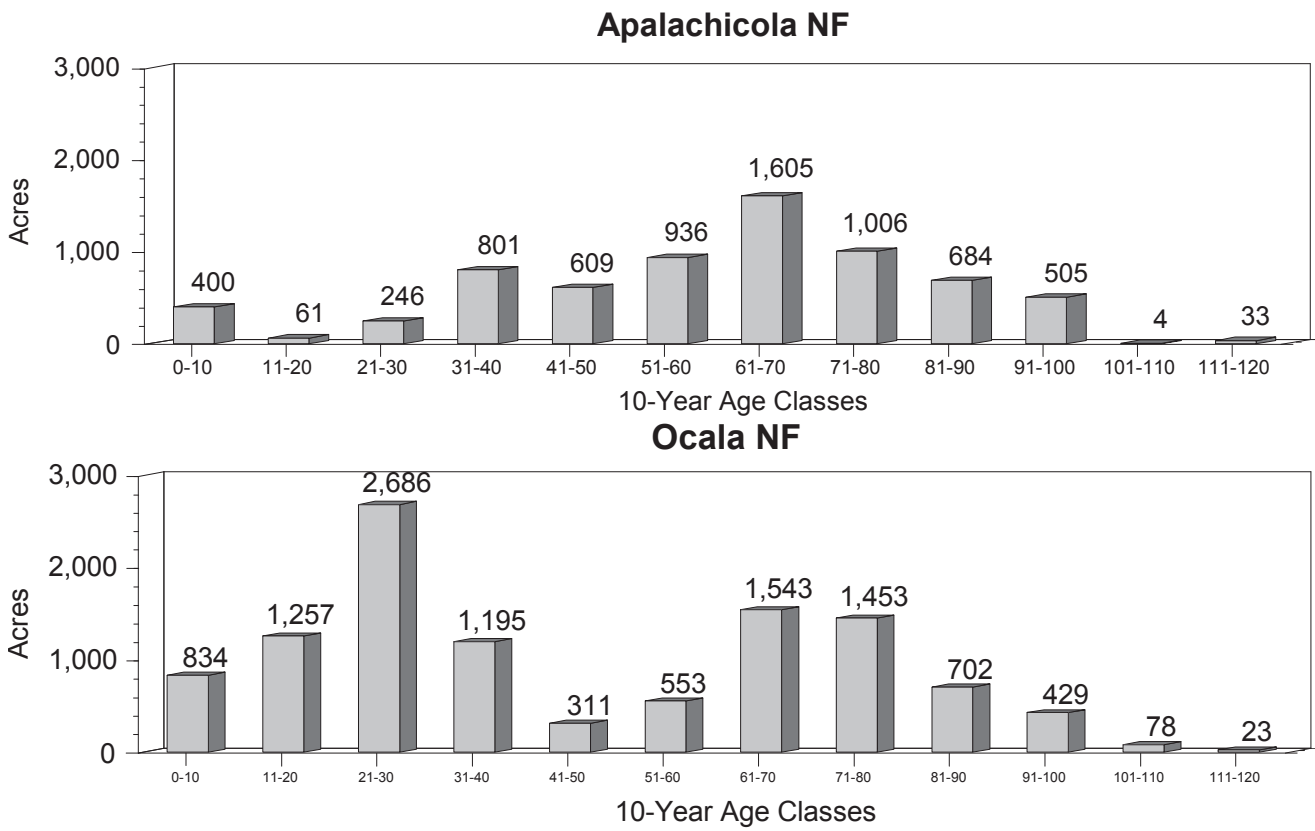
Figure 3.4. Current Age Class Distribution of Sand Pine.

A study of the possible nutrient-depleting effects of this practice indicated that as long as the smaller branches and leaves were left behind, little depletion should occur, since that is where the bulk of the nutrients in the plant body occur (Outcalt, 1988). The structural role the deadwood plays is under study on an experimental burn site on the Ocala NF. The artificial seeding of clearcuts can be expected to have had little genetic effect, except to somewhat homogenize the genetic structure of the forest. Of more concern is whether the resulting sand pine stands are denser than natural stands, since sand pine density strongly influences the vigor of other competing plants. Naturally regenerated sand pine stands can range in density from very sparse to very thick. Timber management practices will have tended to prevent the sparse stands, so community members who use the most open stages of the cycle will have been pushed out a little sooner than they might have. Finally, the size and shape of the clearcuts, and thus the patch structure of the forest, have often not matched the natural pattern of patches that are hundreds to thousands of acres in size.

When the Forest Service began clearcutting, clearcut sizes were 200 acres or more. Negative public comment about the appearance of clearcuts drove the average size down to less than 40 acres for a time, but ecologists' concern for the threatened Florida

scrub-jay—a species that requires larger patch sizes (Woolfenden and Fitzpatrick, 1984; Fitzpatrick, Woolfenden, and Kopeny, 1991)—has raised the average in recent years. Hannah (1992) studied the patch structure of the Lake George RD and reported that patches currently in the stage that can be used by Florida scrub-jays average about 80 acres, which would support about three territories each. He interprets this as less than optimal, since Fitzpatrick, Woolfenden, and Kopeny (1991) recommend that patches for scrub-jays should maximize the number of adjoining territories. Eighty acres (three territories) would leave little room for the budding of territories, a common way that new territories are established in this species. Instead, establishing a new territory under current conditions would often require a dispersal event into a different patch.

Dry to Moist Hardwood Communities: Xeric Hammock, Upland Hardwood Forest, and Slope Forest. Xeric hammocks are patches of live oak and other hardwood that occur as inclusions in sandhill and scrub communities. If fire were excluded from the latter communities, succession would convert them to xeric hammock communities. Xeric hammocks on the national forests in Florida are unsuitable for timber production. They have been protected and promoted for the contribution they make to wildlife habitat. The upland hardwood communities and slope forest communities are only slightly represented on the national forests in Florida. Like xeric hammocks, they have not been harvested and have been actively protected. The upland hardwood forest age class distributions are shown in Figure 3.5.



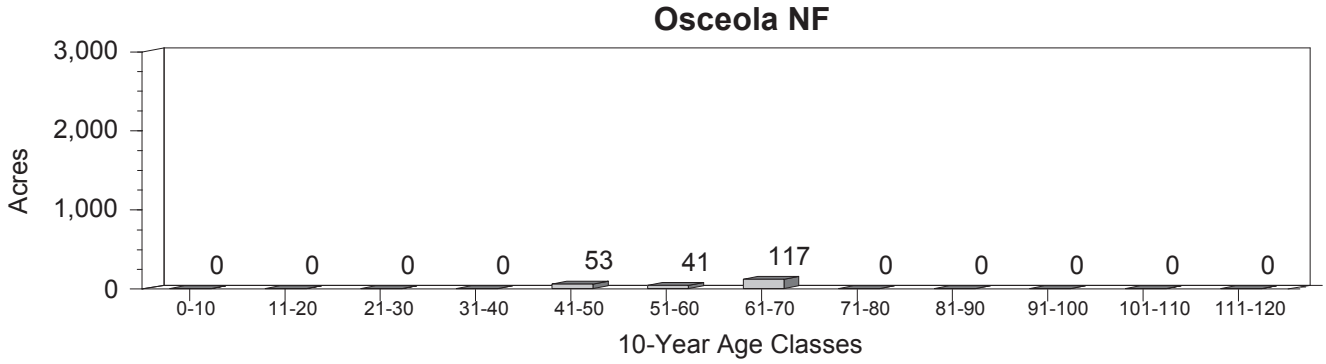


Figure 3.5. Current Age Class Distribution of Upland Hardwood.

Forested Wetland Communities: Basin Swamp, Baygall, Bottomland Forest, Dome Swamp, Floodplain Swamp, Hydric Hammock, Seepage Slope, and Strand Swamp. Most of these communities are dominated by tree species other than pine. They rarely have been subject to timber activity on the national forests in Florida. Most of the wilderness area acres on the forests contain these wetland communities. Rather than themselves being disturbed by management activities, some of their members are disturbing other communities. The wetland shrubs, collectively called titi, have greatly expanded their range in response to wildland fire suppression. Hot, summer wildfires would have made drier areas uninhabitable for titi, but fire suppression has allowed them to encroach into many acres of adjacent seepage slope and wet flatwoods communities. There are approximately 133,000 acres of this type on the Apalachicola NF.

The one community of particular concern in this group is the seepage slope. It occurs on the (almost imperceptible) slope between the flatwoods and the swamp (i.e., along the margins of swamps). One of its common members is pond pine, a species of little commercial value. Efforts to expand the acreage with higher timber value have led to removal of much pond pine and the creation of plowed beds on which some slash pine is grown. Further disturbance to this community has come from the practice of plowing firelines along swamp margins to prevent wildfires from entering the swamps. The impact on this community has been one of the causes of public concern about mechanical soil disturbance on the forests.

There is some concern for the canebreak community found in some ecosystems in the Southeastern United States. Few canebreaks are known to exist on the national forests in Florida. The forested wetland community age class distributions are shown in Figure 3.6.

Nonforested Wetlands: Wet Prairie, Depression Marsh, and Bog. Wet prairies on the Apalachicola NF (locally called *savannahs*) are openings up to several hundred acres in size in flatwood forests. They are botanically notable for their extremely high plant species diversity. Their composition can be similar to the understory in the adjacent flatwoods. Indeed, this type of longleaf pine forest has been called a savannah that happens to have trees on it. Woody species are excluded from open savannahs by the interacting effects of soil (clay lenses) and fire, but without fire, shrubs and trees will encroach. Some savannahs were ditched and planted to slash pine several decades ago. This has affected their composition. Others have ditches and plowed firelines across them, which have altered their hydrology. Many savannahs have experienced some shrub

encroachment from fire suppression, though the more recent prescribed burns have reduced encroachment.

Depression marshes and bogs have not been as disturbed by human activity as savannahs, though the general effects of fire suppression allowing some species to become more common and other species to be outcompeted undoubtedly have affected them as well. Again, prescribed burning is reversing this effect.

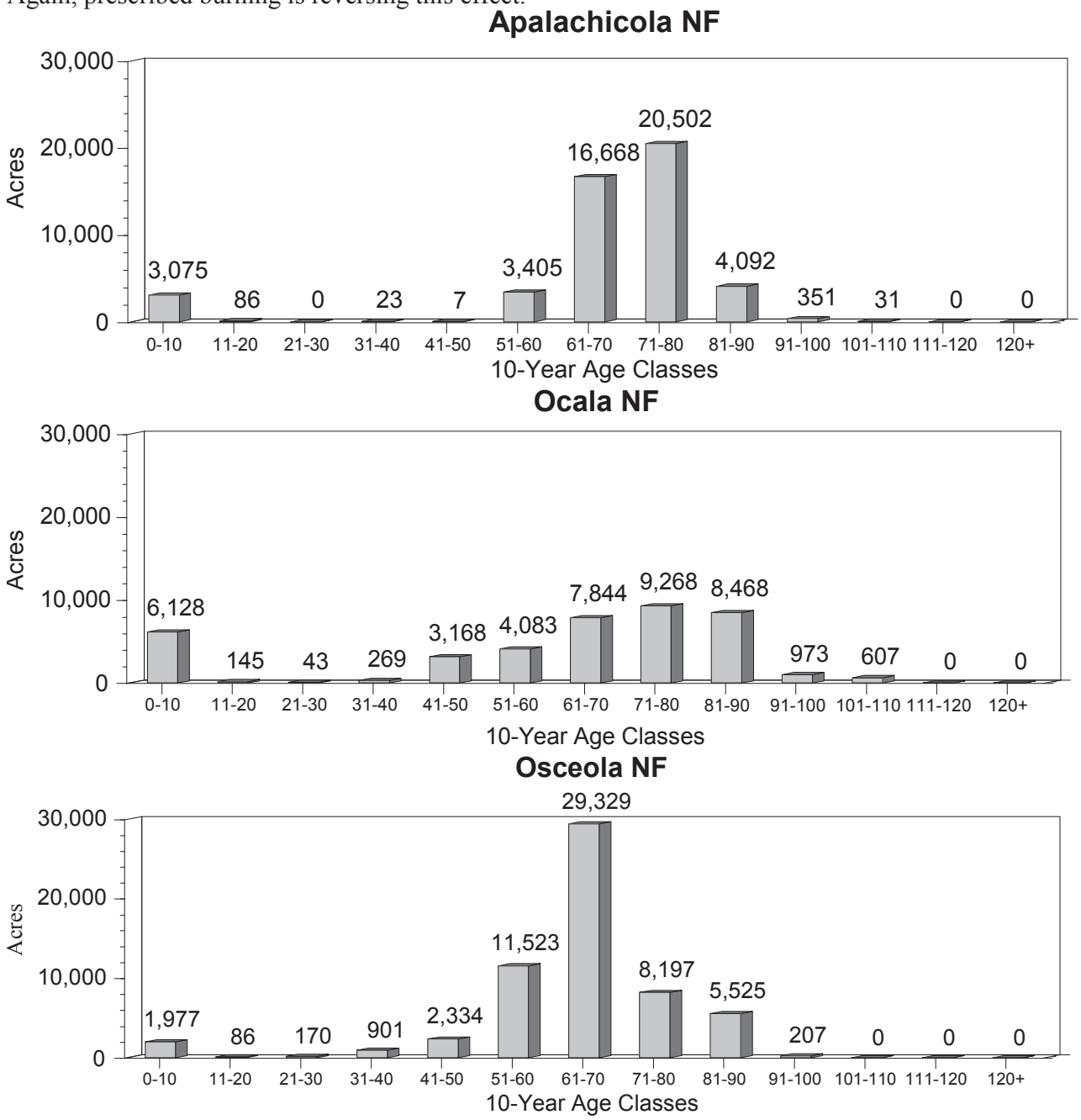


Figure 3.6. Current Age Class Distribution for Forested Wetland Communities.

Sinkholes and Aquatic Caves. The longest aquatic cave yet mapped runs under the Apalachicola NF. The Apalachicola and Ocala NFs both have examples of sinkhole communities. These have suffered some recreational disturbance but are currently protected by special interest area designation.

Lakes and Streams. Lakes and streams on the national forests are protected in several ways. They are protected from the pollution of development by being on public land rather than private land. Every activity—whether timber harvest, road reconstruction, special-use permit, or recreational development—must meet water protection standards. Meanwhile, the Forest Service rarely has engaged in activities that directly affect the waters. A few ponds and lakes have received some game-fish improvement treatments involving fertilization and liming. This is normally restricted to the artificial ponds (borrow pits) created by road construction activities, though several of the hundreds of lakes on the Ocala NF also have been limed and fertilized. There is little or no recognized concern that the waters on the forests are being compromised by Forest Service management activities. Indeed, several are designated Outstanding Florida Waters.

Old Growth. The Forest Service has identified old growth as an important issue both internally and with the public. In 1989, Dale Robertson, the Forest Service chief at the time, developed a generic definition of old-growth forests (USDA memo, 1989).

> Old-growth forests are ecosystems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulation of large wood material, number of canopy layers, species composition, and ecosystem function.
>
> The age at which old growth develops and the specific structural attributes that characterize old growth will vary widely according to forest type, climate, site conditions, and disturbance regime. Old growth in fire-dependent forest types may not differ greatly from young forests in the number of canopy layers or accumulation of downed woody material. However, old growth is typically distinguished from younger growth by several of the following attributes:
>
> 1. Large trees for the species and site.
> 2. Wide variation in tree sizes and spacing.
> 3. Accumulations of large-sized dead standing and fallen trees that are high relative to earlier stages.
> 4. Decadence in the form of broken or deformed tops or boles and root decay.
> 5. Multiple canopy layers.
> 6. Canopy gaps and understory patchiness.

In June 1997, the Region 8 Old-Growth Team published *Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region*. Descriptions of 16 old-growth forest community types are found in this report. Table 3.8 shows the current possible old growth by community types. Total possible old growth includes stands over the minimum age in areas suitable for timber production and stands over or under the minimum age in areas unsuitable for timber production. Following the

table are the descriptions of the old-growth community types known to occur on the forests.

Table 3.8 Table 3.37

Current Possible Old Growth

	Over Minimum Age Suitable	Over Minimum Age Unsuitable	Under Minimum Age Unsuitable	Total Possible
Apalachicola NF				
Upland Longleaf Pine Forest	3,024	328	6,771	10,123
Southern Wet Pine Forest, Woodland, and Savannah	2,950	2,101	8,126	13,177
Cypress/Tupelo Swamp Forest	134	3,102	374	3,610
River Floodplain Hardwood Forest	961	261	933	2,155
Hardwood Wetland Forest	1,357	0	2,709	4,066
Dry and Dry Mesic Oak/Pine Forest	5	0	201	254
Coastal Plain Upland Mesic Hardwood Forest	7	0	32	109
Dry and Xeric Oak Forest, Woodland, and Savannah	434	0	47	481
Subtotal	**8,990**	**5,792**	**19,193**	**33,975**
Ocala NF				
Upland Longleaf Pine Forest	1,846	182	74	2,102
Southern Wet Pine Forest, Woodland, and Savannah	7	347	49	469
Cypress/Tupelo Swamp Forest		0	362	362
River Floodplain Hardwood Forest		0	1,102	1,102
Hardwood Wetland Forest	142	7,703	2,347	10,192
Dry and Dry Mesic Oak/Pine Forest		0	32	32
Coastal Plain Upland Mesic Hardwood Forest	274	67	48	389
Dry and Xeric Oak Forest, Woodland, and Savannah	112	450	82	644
Subtotal	**2,447**	**8,749**	**4,096**	**15,292**
Osceola NF				
Upland Longleaf Pine Forest	444	0	263	707
Southern Wet Pine Forest, Woodland, and Savannah	564	24	1,629	2,217
Cypress/Tupelo Swamp Forest	333	0	9,011	9,344
River Floodplain Hardwood Forest	4	0	44	85
Hardwood Wetland Forest		0	1,886	1,886
Dry and Dry Mesic Oak/Pine Forest		0	0	0
Coastal Plain Upland Mesic Hardwood Forest		0	0	0
Dry and Xeric Oak Forest, Woodland, and Savannah	0	0	0	0
Subtotal	**1,382**	**24**	**12,833**	**14,239**
TOTAL	**12,819**	**14,565**	**36,122**	**63,506**

Upland Longleaf Pine Forest, Woodland, and Savannah. On the coastal plains, these communities typically reside on sandhills, although in central and south Florida some occur on slight rises in flatwoods. In presettlement times, these areas occurred over a wide range of soil types and covered a vast area of the Southeastern United States. These old-growth communities have frequent transitions in ages, tree sizes, and tree densities. Common associates with these communities are clusters of scrub oaks and mesic hardwoods— including blackjack oak, bluejack oak, post oak, sand live oak, and sand post oak. A rich ground cover of numerous herbs and low-growing shrubs is present. The most dominant of the ground cover species is wiregrass. The minimum stand age is 110 years for longleaf pine. Fire, especially during growing season, is the major disturbance in these communities. These communities are considered pyroclimatic. In the long-term absence of fire, these sites will convert to forests composed of less fire-tolerant species,

especially hardwoods. Storms are also disturbances that affect these sites. Lightning provides small scale openings, and windstorms create a large range of opening sizes.

Southern Wet Pine Forest, Woodland, and Savannah. Wet pine forests, woodlands, and savannahs of the Southeast are subtypes within the pine flatwoods forest region of the Atlantic and Gulf Coastal Plains. Representative sites include boggy nonriverine flatlands, coastal flatlands, swamps, and lowlands adjacent to ponds, streams, and other wet areas. Species composition differs widely among stands and is largely dependent on degree of flooding. On mineral soils where flooding is limited, longleaf and/or slash pine is predominant. Fire usually restricts hardwood species to wet sites. Longleaf and slash pine are replaced by pond pine on organic soils that are subject to prolonged flooding. Associated species on these organic soils include bays, cypress, swamp tupelo, and water oak. The minimum stand age is 110 years for longleaf pine, 80 years for slash pine, and 80 years for pond pine. These areas are fire dependent and will succeed to hardwoods in the long-term absence of fire.

Cypress/Tupelo Swamp Forest. These types are found in areas prone to frequent flooding, like depressional areas, river floodplains, sloughs, and swamps. Bald cypress is more frequently associated with areas of flowing water, where pond cypress usually is found along the edge of ponds, swamps, and other wet areas. These cypress and tupelo species can occur in pure or mixed stands. The minimum stand age is 120 years for pond cypress and 200 years for bald cypress. The disturbance regimes of these sites are usually low intensity, small scale events, causing the loss of single trees. However, areas near the coast are sometimes subject to large scale events caused by tropical weather systems; for example, hurricanes.

River Floodplain Hardwood Forest. The majority of these forests are found in broad river bottomlands. These forests have an abundance of water and rich alluvial soils. Flooding regime, not soil type, seems to be the primary influence of the vegetation in these forests. Tree species in these forests include laurel oak, red maple, river birch, sweetgum, sycamore, water hickory, and willow oak. The minimum stand age is 100 years. Flooding is a natural component of these forests and prevents the invasion of shade-tolerant, flood-sensitive species. Wind events result in single or multiple windthrown trees, creating openings in the canopy. Trees are especially vulnerable to windthrow because of the limited downward growth of their root systems as a result of the high water tables.

Hardwood Wetland Forest. These forests occur mainly in nonriverine, topographically defined basins on uplands, small drainages, and along the margins of coastal plain ponds and bays. Species in these forests include black ash, bur oak, black tupelo, eastern cottonwood, elms, green ash, red maple, silver maple, swamp white oak, sweetgum, and sycamore. Black chokeberry, highbush blueberry, and holly are common shrubs. The minimum stand age is 120 years. Disturbance regimes include fluctuating water levels, flooding, and windstorms.

Dry and Dry Mesic Oak/Pine Forest. In the coastal plain these sites occur on droughty uplands. The major canopy species in Florida include blackjack oak, loblolly pine, pignut hickory, post oak, southern red oak, and sweetgum. The midstory contains a variety of

species including dogwood and sassafras. The minimum stand age is 120 years. Fire, lightning, and wind are the major sources of disturbance in these areas.

Coastal Plain Upland Mesic Hardwood Forest. These forests occur on moist upland sites in the coastal plains. They consist mostly of hardwood species—including dogwood, holly, live oak, pignut hickory, southern magnolia, and sweetgum. The minimum stand age is 120 years. Small scale, single tree events are the characteristic disturbance in these forests. Large scale events can occur and are usually associated with major wind events. The large scale events favor the shade-intolerant species, such as oaks, while the small-scale events are more favorable to the shade-tolerant species, such as dogwood and magnolia.

Dry and Xeric Oak Forest, Woodland, and Savannah. These forests are found on very dry and infertile sandy soils. The species composition of these sites is made up of small-statured trees that include bluejack oak, sand live oak, sand post oak, and turkey oak. The minimum stand age is 90 years. Fire and wind events are the primary disturbance regimes in these areas. The return interval for fire is variable, but usually much longer than that of other upland areas in Florida. Wind events can create a large range of opening sizes in the community type, ranging from single tree to thousands of acres.

Environmental Consequences

Vegetation on national forests is shaped by many processes acting together. These can be grouped into natural processes, indirect activities, and direct activities. Natural processes are lightning-ignited fires, floods, storms, and insect and disease outbreaks. Indirect activities are human activities that occur outside the forest but affect it. A road near the forest, for example, stops wildfires from crossing into the forest, thus reduces the natural fire frequency inside the forest. Direct activities are those carried out or regulated directly by the Forest Service on national forest land. These include timber harvests, trail construction, road maintenance, and prescribed burning. The Forest Plan primarily focuses on direct activities.

In the longleaf and slash pine parts of the forest, all alternatives share an emphasis on several direct activities. Among these are prescribed burning, thinning of young stands, a light-on-the-land approach to site preparation and wildland fire suppression, type conversion from the existing (off-site) species to the appropriate on-site species, and a timber schedule that allows much of the forest to grow older than is currently the case. Furthermore, most of these acres comprise HMAs for the endangered RCW. RCW management affects the amount and type of timber harvesting activities that may occur on the forest. Vegetation management differs somewhat between alternatives. Below they are discussed by alternative.

All alternatives propose a prescribed burning schedule under which all longleaf and slash pine acres would burn once every 3 years on average, with increasing emphasis on growing-season burning as the fuel load declines under winter prescribed burns. Such a schedule may mimic the natural wildfire's frequency and timing. Robbins and Myers (1992) have reviewed the effect of prescribed burning in Florida. Their monograph can

be briefly summarized. Prescribed burning that emphasizes growing-season burning can be expected, over several burning events, to return the structure of the understory to that described by early travelers—namely open and parklike with a predominance of grasses and herbs. Woody shrubs would be present as subshrubs; and oak hammocks would occur here and there, but not as abundantly as under wildland fire suppression. Fire-intolerant wetland species, such as titi shrubs, would disappear from drier areas where they have encroached during the last century. Burning, especially growing-season prescribed burning, not only tends to increase the abundance of grasses and herbs but also encourages flowering. Wiregrass, one of the dominant grasses in the longleaf pine forest communities, actually depends on growing-season fires to trigger it to bloom. Palmetto blooms significantly more abundantly in the second year after a fire than in unburned areas (Abrahamson, 1994). Fire can cause a reduction in pine growth, especially growing-season burns during late summer when ambient temperatures are high and pine foliage is easily scorched.

All alternatives propose the thinning of dense, young stands of longleaf and slash pine. Thinning allows the trees that remain to grow more quickly into large-diameter specimens. It also lets more light reach the forest floor, benefiting the understory plants. Such thinning is cited by Kral (USDA, 1983) as important for the survival of the rare, threatened, and endangered grasses and herbs found in the longleaf pine forest. Kral also cites the harmful effects of soil disturbance. This is not surprising since these longleaf pine forest species are long-lived perennials that are not adapted to disturbed sites. The proposed light-on-the-land approach to site preparation and wildland fire suppression therefore can be expected to benefit these plants. All alternatives call for using the least ground-disturbing site-preparation technique that will allow establishment of pine seedlings on a site and the last-resort-only use of plowed firelines in wildland fire suppression. If a plowed fireline proved necessary to protect a critical resource, the line would be rehabilitated after the fire.

In all alternatives, existing slash and sand pine stands identified as off-site would be scheduled for type conversion to longleaf pine. Longleaf pine restoration can be accomplished using a variety of harvest methods. In the context of the Forest Plan, two methods are considered to have the objective of longleaf pine restoration: clearcutting off-site pine species and planting longleaf pine, and removing slash pine from mixed longleaf/ slash pine stands in preparation for future longleaf pine regeneration. Harvest methods would work hand-in-glove with the prescribed burning program to restore the entire ecosystem to the extent possible.

Candidate stands where off-site slash and sand pine would be clearcut and longleaf pine replanted can be identified using soil types, drainage classes, and growth rates of existing species. Each alternative has some amount of this activity scheduled. On the Osceola NF, determining off-site species is more difficult. Many stands are mixed longleaf/slash pine. It is highly likely that many of these stands were originally longleaf pine. The current composition is a result of a change in the fire regime. In addition to clearcutting off-site slash pine and planting longleaf pine, restoration also will include removing the slash pine from mixed stands with the objective of preparing the stands for future longleaf pine regeneration harvests such as group selection or irregular shelterwood.

Table 3.9 shows the estimated amount of longleaf pine restoration by harvest method for each alternative. A discussion of these harvest methods is found in the ``Timber'' section of this chapter.

Table 3.9

Estimated Harvest Acres per Period by Forest

	Period 1	Period 2	Period 3	Period 4	Period 5
Alternative A					
Irregular Shelterwood					
Apalachicola NF	1,690	7,721	12,850	8,475	16,496
Ocala NF	17	3,288	2,246	6,093	4,004
Osceola NF	0	1,372	0	0	2,912
Subtotal	1,863	12,381	15,096	14,568	23,412
Overstory Removal					
Apalachicola NF		1,690	7,721	12,850	8,475
Ocala NF		17	3,288	1,998	4,313
Osceola NF	0	0	139	0	0
Subtotal		1,863	11,148	14,848	12,788
Pine Thinnings					
Apalachicola NF	43,104	34,439	26,441	8,469	8,788
Ocala NF	9,054	10,774	12,770	12,841	10,244
Osceola NF	3,896	8,735	7,323	11,240	7,984
Subtotal	56,054	53,948	46,534	32,550	27,016
Hardwood Clearcut					
Apalachicola NF	1,000	1,000	1,000	1,000	1,000
Ocala NF	50	50	50	50	50
Osceola NF	580	580	580	580	580
Subtotal	2,080	2,080	2,080	2,080	2,080
Longleaf Pine Restoration (Clearcut, Plant)					
Apalachicola NF	1,280	3,464	11,633	16,285	6,245
Ocala NF	58	97	3,230	32	36
Osceola NF	0	65	2,125	1,882	764
Subtotal	1,860	4,505	16,988	18,489	7,377
Sand Pine Clearcut					
Ocala NF	49,820	46,982	45,000	45,000	47,332
Shelterwood/Seed Tree/Clearcut					
Ocala NF	23	18	2,371	2,643	2,100
TOTAL	**111,911**	**121,941**	**139,217**	**130,178**	**122,105**
Alternative B	**Period 1**	**Period 2**	**Period 3**	**Period 4**	**Period 5**
Group Selection					
Apalachicola NF	16,018	10,029	19,375	21,537	33,604
Ocala NF	1,000	1,228	4,917	9,725	10,937
Osceola NF	2,015	2,265	2,311	2,463	5,892
Subtotal	19,033	13,522	26,603	33,725	50,433
Pine Thinnings					
Apalachicola NF	32,996	35,411	40,449	28,820	23,465
Ocala NF	12,909	15,387	15,927	16,350	11,898
Osceola NF	6,164	11,978	9,666	8,946	2,261
Subtotal	52,069	62,776	66,042	54,116	37,624
Longleaf Pine Restoration (Clearcut, Plant)					
Apalachicola NF	7,916	7,916	5,791	9,490	2,764
Ocala NF	1,766	2,824	3,163	1,234	2,720
Osceola NF	404	0	892	1,144	1,610
Subtotal	10,086	10,740	9,846	11,868	7,094
Sand Pine Clearcut					
Ocala NF	32,341	33,185	32,029	31,171	30,188
TOTAL	**113,529**	**120,223**	**134,520**	**130,880**	**125,339**

Table 3.9 (cont.)

	Alternative C				
	Period 1	**Period 2**	**Period 3**	**Period 4**	**Period 5**
Irregular Shelterwood					
Apalachicola NF	1,500	5,290	11,653	16,939	11,260
Ocala NF	2,922	2,516	2,846	3,458	3,544
Osceola NF	300	5,740	4,628	5,509	7,400
Subtotal	4,722	13,546	19,127	25,906	22,204
Overstory Removal					
Apalachicola NF	0	1,500	5,290	11,653	16,939
Ocala NF	0	2,922	2,516	2,846	3,458
Osceola NF	0	300	5,740	4,628	5,509
Subtotal		4,722	13,546	19,127	25,906
Pine Thinnings					
Apalachicola NF	38,957	36,664	30,922	19,930	28,167
Ocala NF	8,147	11,425	13,793	14,716	14,728
Osceola NF	4,783	16,934	16,056	18,608	12,199
Subtotal	51,887	65,023	60,771	53,254	55,094
Hardwood Clearcut					
Apalachicola NF	8,000	8,000	4,854	2,857	5,874
Ocala NF	2,811	2,811	2,811	2,811	2,811
Osceola NF	4,610	4,610	4,270	4,061	3,570
Subtotal	15,421	15,421	11,935	9,729	12,255
Longleaf Pine Restoration (Clearcut, Plant)					
Apalachicola NF	10,788	8,991	11,195	7,277	5,480
Ocala NF	486	486	142	139	0
Osceola NF	1,539	1,539	1,539	0	0
Subtotal	12,813	11,016	12,876	7,416	5,480
Sand Pine Clearcut					
Ocala NF	40,895	39,801	40,131	39,041	41,856
Shelterwood/Seed Tree/Clearcut					
Ocala NF	844	1,600	1,689	1,721	1,824
TOTAL	**126,582**	**151,129**	**160,075**	**156,194**	**164,619**

	Alternative D				
	Period 1	**Period 2**	**Period 3**	**Period 4**	**Period 5**
Irregular Shelterwood					
Apalachicola NF			4,943	8,382	8,102
Ocala NF	1,384	1,618	2,351	4,434	4,413
Osceola NF	0	0	2,555	3,208	3,208
Subtotal	1,384	1,618	9,849	16,024	15,723
Overstory Removal					
Apalachicola NF				4,943	8,382
Ocala NF		1,384	1,601	2,351	4,434
Osceola NF	0	0	0	2,555	3,208
Subtotal		1,384	1,601	9,849	16,024
Pine Thinnings					
Apalachicola NF	21,153	22,771	27,970	23,978	21,720
Ocala NF	5,347	2,923	5,092	6,929	5,292
Osceola NF	4,184	15,781	15,582	16,933	6,342
Subtotal	30,684	41,475	48,644	47,840	33,354
Group Selection					
Apalachicola NF	4,428	2,223	4,664	5,953	9,268
Ocala NF					
Osceola NF	924	900	924	4,547	6,520
Subtotal	5,352	3,123	5,588	10,500	15,788
Longleaf Pine Restoration (Clearcut, Plant)					
Apalachicola NF	7,872	7,951	11,323	7,197	3,714
Ocala NF	1,386	1,787	1,682	1,276	1,241
Osceola NF	1,039	1,178	3,367	1,407	2,713
Subtotal	10,297	10,916	16,372	9,880	7,668
Sand Pine Clearcut					
Ocala NF	30,861	31,101	31,294	26,081	25,299
TOTAL	**78,578**	**89,617**	**113,348**	**120,174**	**113,856**

Table 3.9 (cont.)

	Alternative E				
	Period 1	**Period 2**	**Period 3**	**Period 4**	**Period 5**
Irregular Shelterwood					
Apalachicola NF	1,500	1,500	2,429	2,429	1,682
Ocala NF	7	779	215	215	210
Osceola NF	300	500	2,489	21	607
Subtotal	1,878	2,779	5,133	2,665	2,499
Overstory Removal					
Apalachicola NF		1,500	1,500	2,429	2,429
Ocala NF		7	779	215	215
Osceola NF	0	300	500	2,489	21
Subtotal		1,878	2,779	5,133	2,665
Pine Thinnings					
Apalachicola NF	40,540	46,309	59,859	51,165	43,333
Ocala NF	3,054	3,272	5,288	9,024	11,739
Osceola NF	8,421	18,315	15,485	13,808	2,598
Subtotal	52,015	67,896	80,632	73,997	57,670
Group Selection					
Apalachicola NF	28,000	26,244	35,369	40,204	49,870
Ocala NF	2,500	2,500	4,166	9,975	6,194
Osceola NF	10,000	10,000	10,000	12,164	17,771
Subtotal	40,500	38,744	49,535	62,343	73,835
Longleaf Pine Restoration (Clearcut, Plant)					
Apalachicola NF	8,152	8,152	11,385	13,532	7,104
Ocala NF	2,947	982	304	909	282
Osceola NF	700	300	353	1,564	445
Subtotal	11,799	9,434	12,042	16,005	7,831
Longleaf Pine Restoration (Slash Pine Removal)					
Osceola NF	8,000	6,000	4,000	3,000	3,000
Sand Pine Clearcut					
Ocala NF	40,000	39,786	41,959	37,554	46,041
TOTAL	**154,192**	**166,517**	**196,080**	**200,697**	**193,541**

Longleaf/slash pine forests would become older (and trees larger) in all alternatives. Alternatives that emphasize the even-aged system of shelterwood management would put stands on 120-year rotations for longleaf pine and 100-year rotations for slash pine. Trees from the previous generation also would be retained on the site until they die. The uneven-aged system of selection cutting would follow the rule that 6 trees per acre larger than 18 inches always would be retained. Of course, these would die out gradually from natural mortality, but there would be a continuous flow into these larger size categories as each remaining live tree on the site continued to grow. On the forests, trees 18 inches in diameter are rarely as young as 120 years, so there would be a substantial number of trees significantly older than 120 years. Whether a shelterwood or a selection system of management is used, more snags and deadwood (and the organisms that use these) would be present than is currently the case.

Harvesting of nontimber products would be allowed in all alternatives, but the area available would vary by desired future condition (DFC). The three most collected plant products on the forests are firewood, crookedwood, and palmetto berries. The use of firewood collection as a tool to remove encroaching oak midstory in longleaf pine areas is encouraged in all alternatives as part of the restoration of the sandhill community. Mature oak hammocks would not be removed. Crookedwood collection (i.e., collection of rusty lyonia and wax myrtle branches) would continue to be restricted to either roadside ditches or to areas scheduled for timber harvest, where these branches would be

crushed anyway. These shrubs resprout readily. Removal of part of the current crop of branches is not likely to have any lasting effect. The collection of palmetto berries does remove both palmetto seeds and potential wildlife food from the forest. Palmettos are long-lived plants that rarely reproduce from seed; therefore, removal of part of the seed crop is unlikely to have a measurable effect on palmetto regeneration. Under the proposed burning regime, palmetto is expected to be reduced in all alternatives. Collection areas will continue to be chosen to minimize the impact of food loss on wildlife.

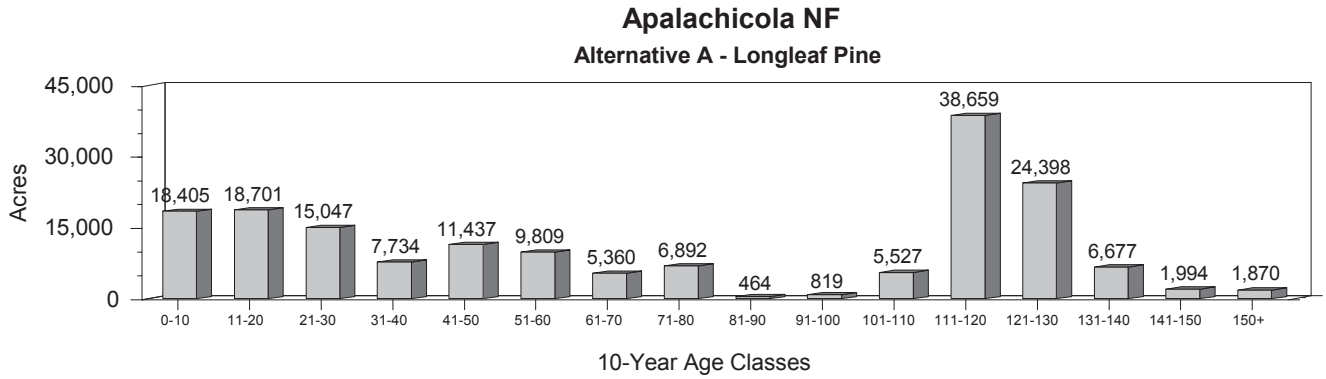
Any given activity has more than one effect—roads support both timber harvesting and prescribed burning, and thinning both increases the value of timber crops and enhances growth conditions for understory plants. Some effects are disruptive to natural communities and some are supportive of their integrity. All alternatives include management areas in which some direct activities are prohibited or limited in extent. The extreme case is wilderness areas, where all motorized activities are prohibited in order to provide a recreational area free of the sound of motors and the sight of their impact. The more restricted the activities, the more vegetation will be shaped by natural processes and indirect activities, rather than by direct activities, even those that restore communities. The vegetation may not return to its pristine condition before European influence. Instead, the long-term state of the vegetation is unpredictable. What is predictable is that the vegetation will receive less direct mechanical disturbance than in the past. Other activities known to protect natural communities (erosion control, prescribed burning, and eradication of invading nonnatives) will occur to some extent within the restrictions of the management area and the budget. All alternatives would prohibit timber production within the primary zone of water bodies and would expand the definition of primary zones to include sinkholes and temporary ponds. Then these waterside zones would be included in the areas of little direct activity.

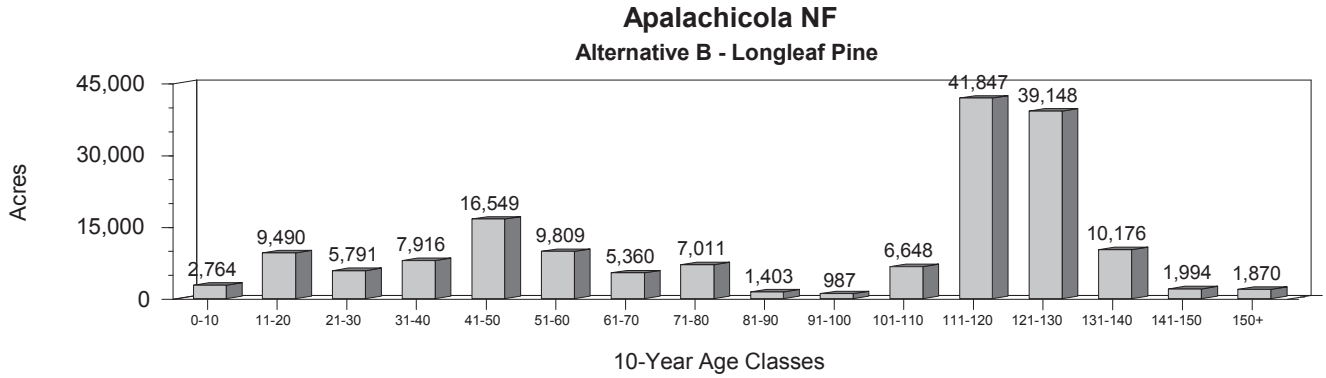
All alternatives impose restrictions on activities that occur in the foreground of major roads and trails to provide visually-pleasing scenery. Visually-pleasing scenery is scenery that does not show the effects of recent disturbance. Since some of the natural communities, most notably scrub, actually depend on cycles of disturbance for their integrity, suppression of such disturbance along roads and trails can be expected to create narrow corridors of altered communities. For example, woody understory shrubs, such as oaks, can be expected to gain roadside/trailside dominance. In some cases, the scenery would be protected by placing a disturbance (e.g., a borrow pit or a sanitary station) some distance off the main road. This would increase the total amount of disturbance to the vegetation, because a longer access road would be necessary.

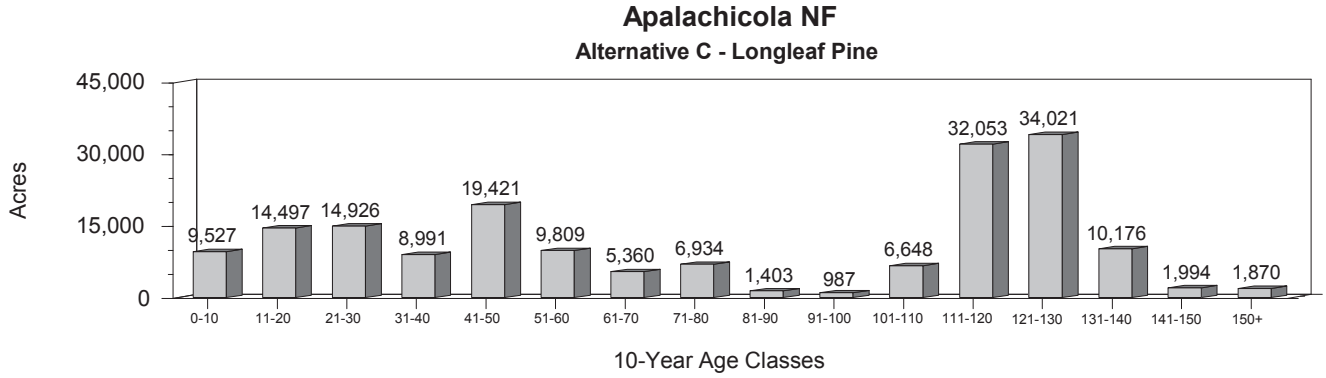
All alternatives include the existing Pinecastle Bombing Range on the Ocala NF. The future of this bombing range will depend on biological and needs assessments that have been initiated. Occasionally live bombs are used here, but rarely have they ignited fires. The natural community involved is scrub, a high-disturbance system adapted to fire. No long-term damage is expected to the community. Individual species will be displaced when the site goes through the part of the age cycle that is inhospitable to them, just as they are displaced under either a natural fire regime or the clearcutting regime outside the bombing range. Fires may be more frequent here than they are in the clearcuts elsewhere.

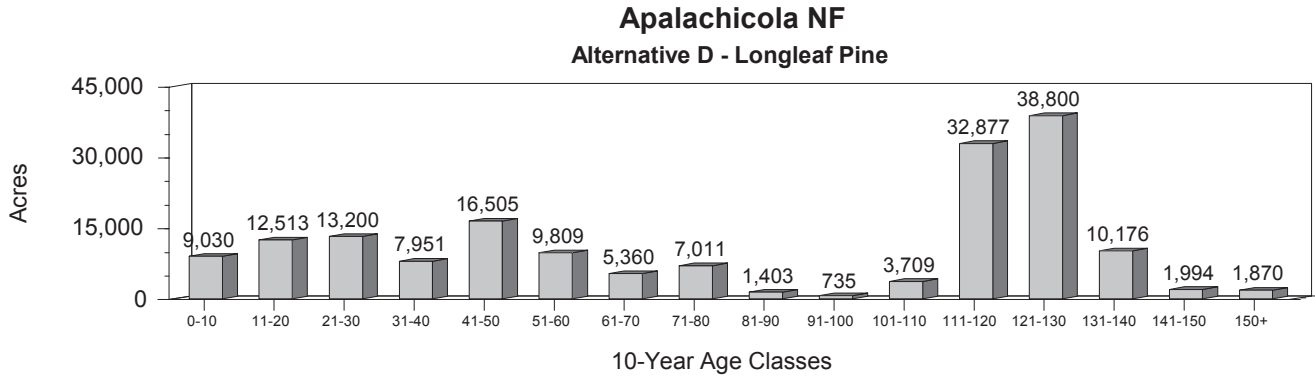
Species adapted to the early ages of the cycle (e.g., Florida scrub-jays) may be more frequent here, and those adapted to older ages (e.g., liverworts) may be less frequent.

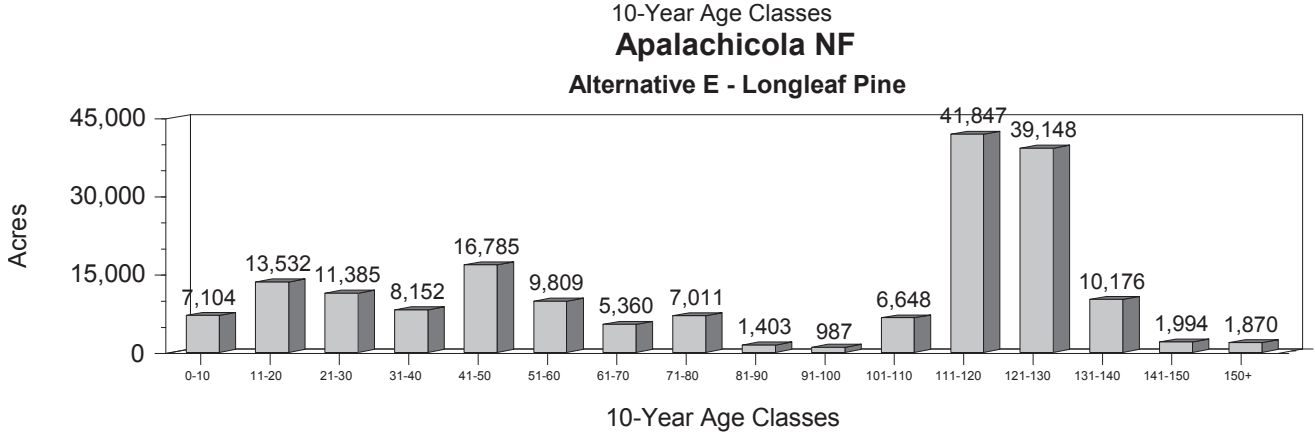
Figure 3.7 (pages 3-39 through 3-47) shows the age class distributions of longleaf, sand, and slash pine forests at the end of 50 years for each forest by alternative. Table 3.9 and Figure 3.7 can be referred to in the following discussion of alternatives.

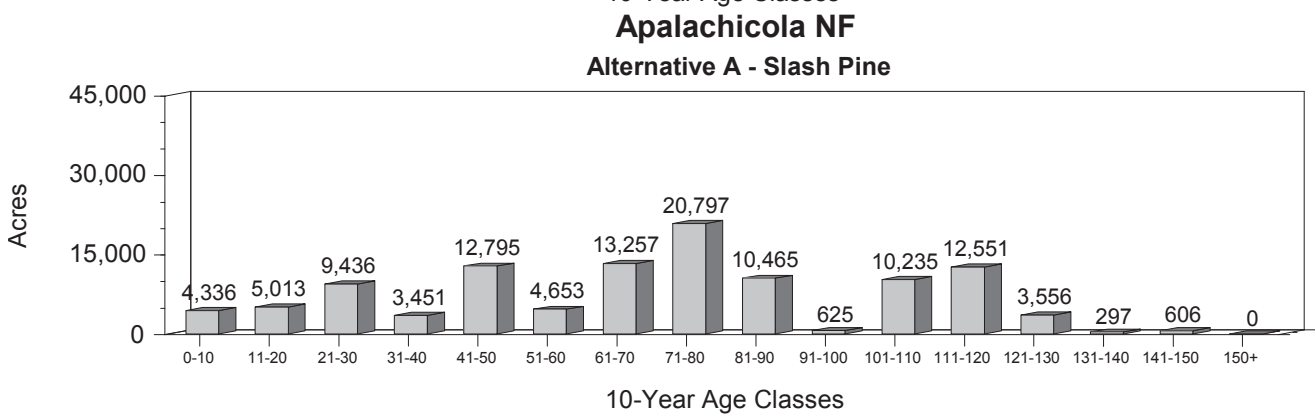


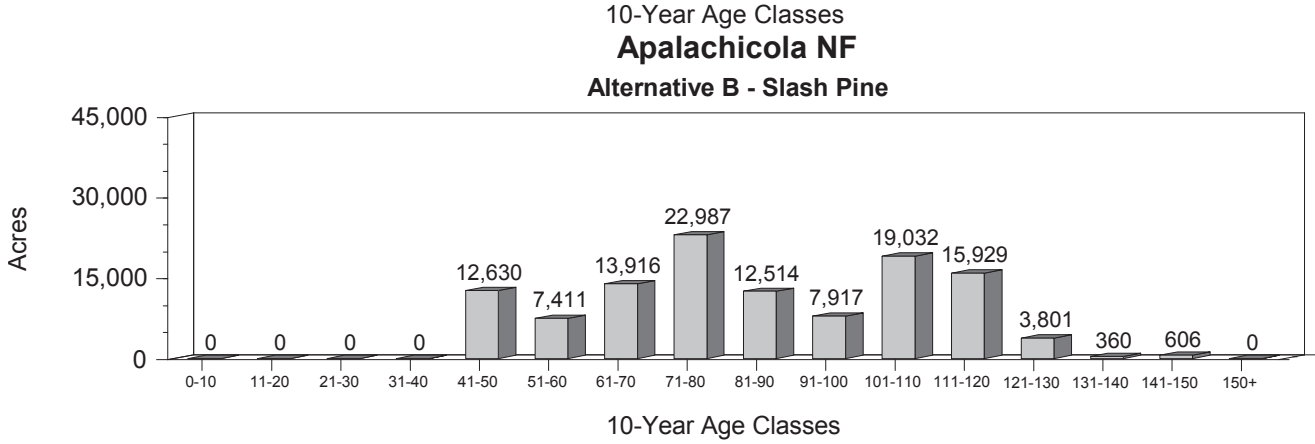


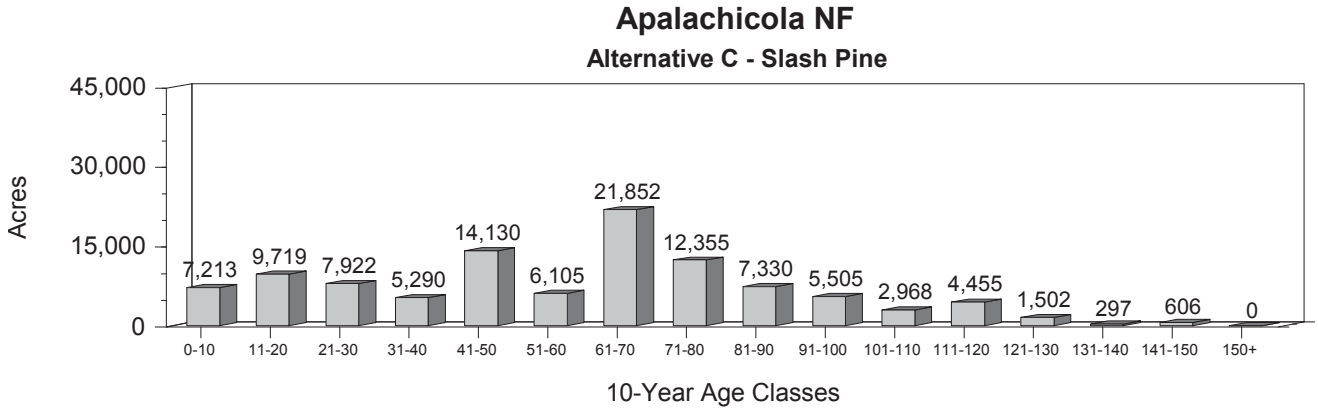


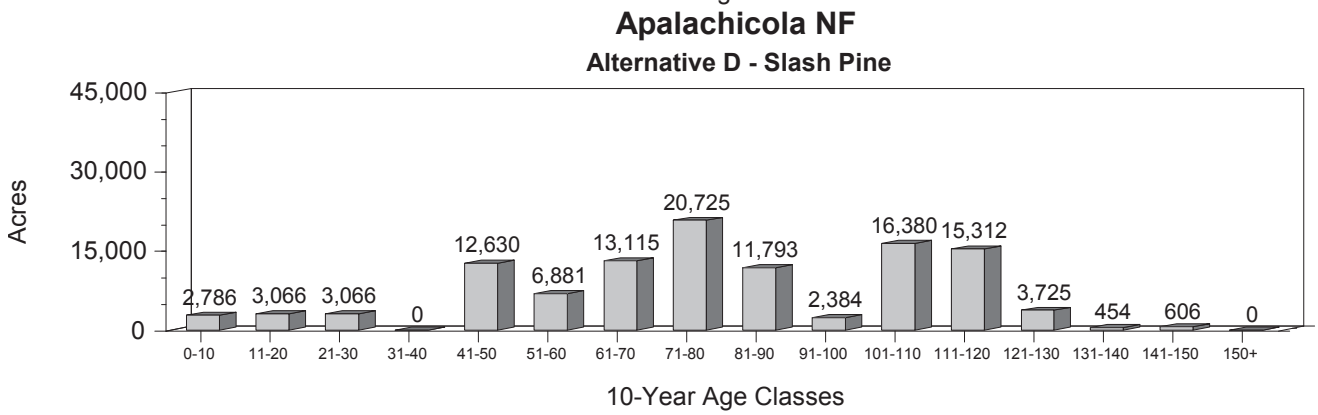

Apalachicola NF
Alternative D - Longleaf Pine
Acres
45,000
30,000
15,000
0
9,030
12,513
13,200
7,951
16,505
9,809
5,360
7,011
1,403
735
3,709
32,877
38,800
10,176
1,994
1,870
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

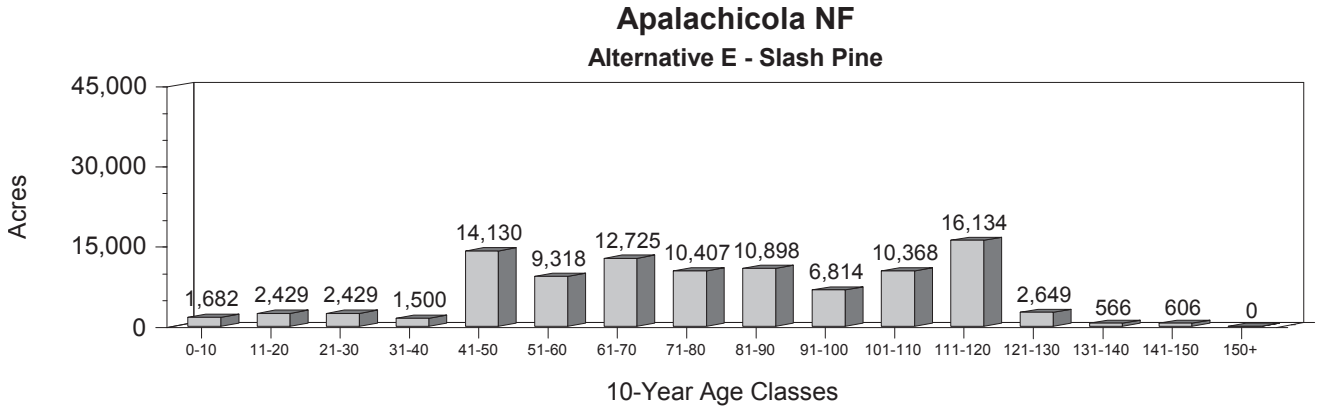

Apalachicola NF
Alternative E - Longleaf Pine
Acres
45,000
30,000
15,000
0
7,104
13,532
11,385
8,152
16,785
9,809
5,360
7,011
1,403
987
6,648
41,847
39,148
10,176
1,994
1,870
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

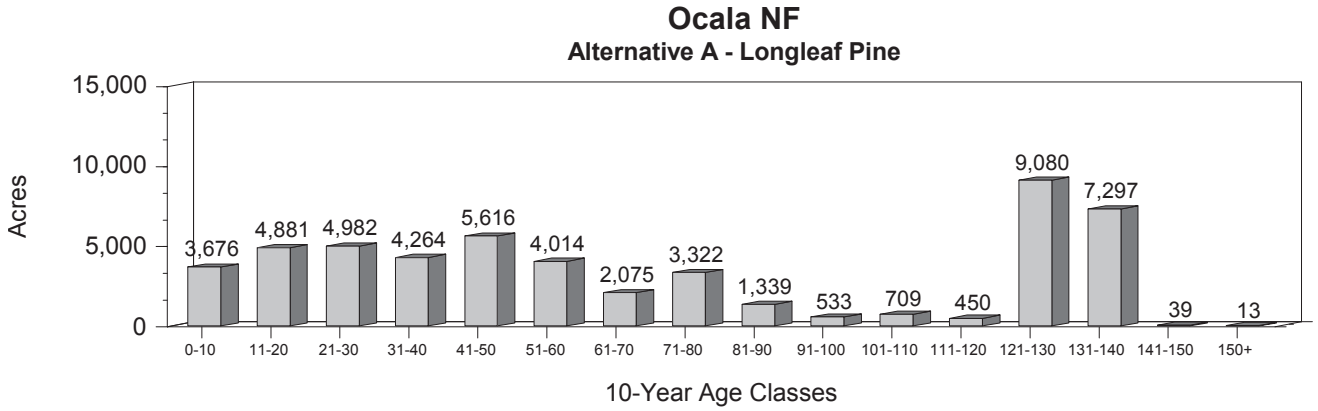

Apalachicola NF
Alternative A - Slash Pine
Acres
45,000
30,000
15,000
0
4,336
5,013
9,436
3,451
12,795
4,653
13,257
20,797
10,465
625
10,235
12,551
3,556
297
606
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

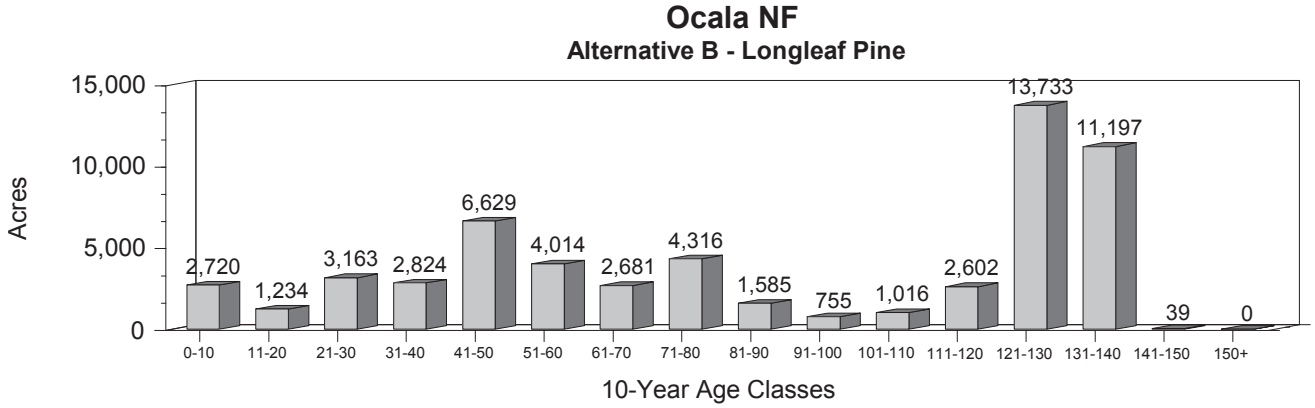

Apalachicola NF
Alternative B - Slash Pine
Acres
45,000
30,000
15,000
0
0
0
0
0
12,630
7,411
13,916
22,987
12,514
7,917
19,032
15,929
3,801
360
606
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

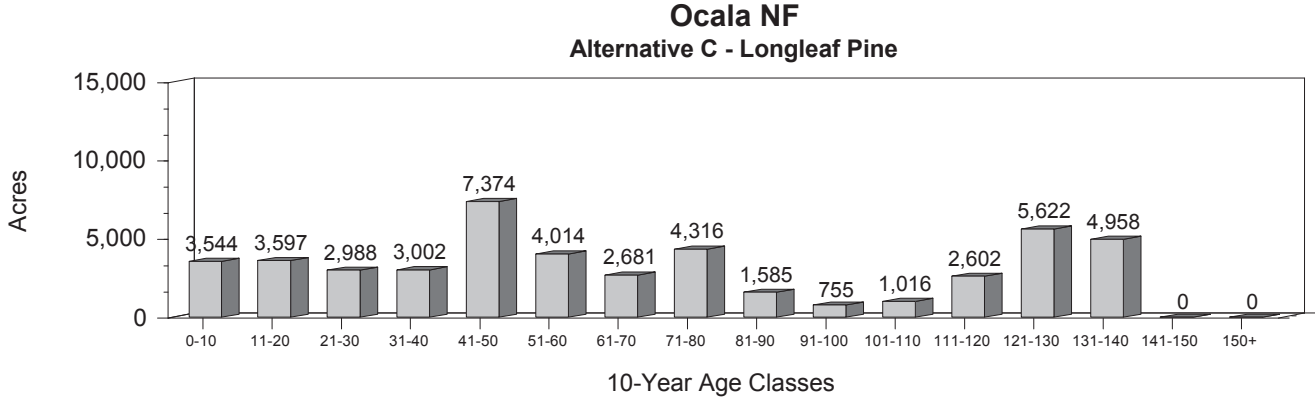

Apalachicola NF
Alternative C - Slash Pine
Acres
45,000
30,000
15,000
0
7,213
9,719
7,922
5,290
14,130
6,105
21,852
12,355
7,330
5,505
2,968
4,455
1,502
297
606
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

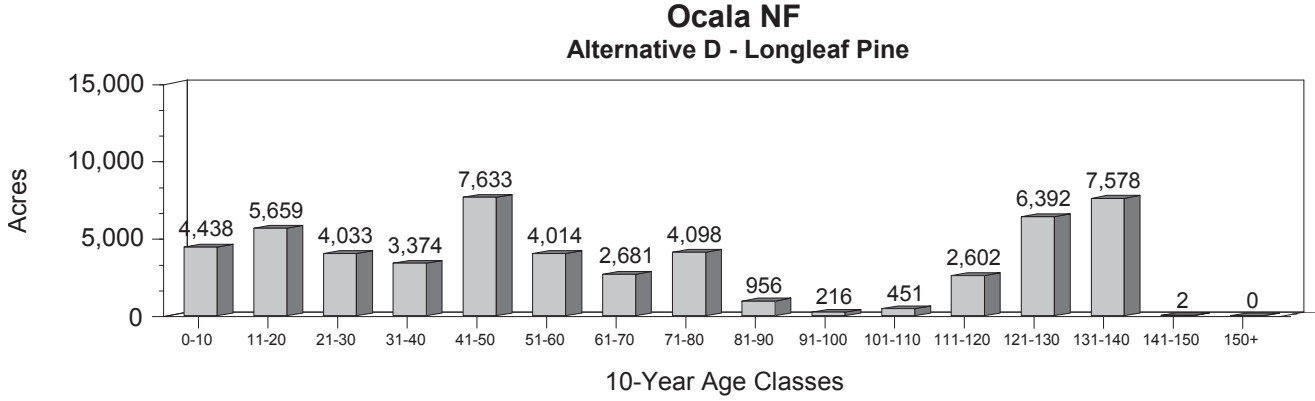

Apalachicola NF
Alternative D - Slash Pine
Acres
45,000
30,000
15,000
0
2,786
3,066
3,066
0
12,630
6,881
13,115
20,725
11,793
2,384
16,380
15,312
3,725
454
606
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

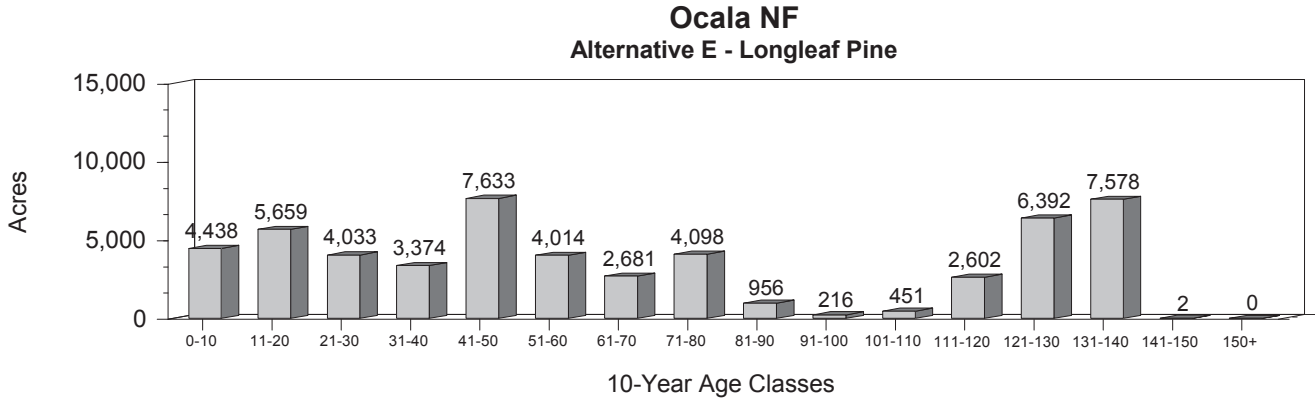

Apalachicola NF
Alternative E - Slash Pine
Acres
45,000
30,000
15,000
0
1,682
2,429
2,429
1,500
14,130
9,318
12,725
10,407
10,898
6,814
10,368
16,134
2,649
566
606
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

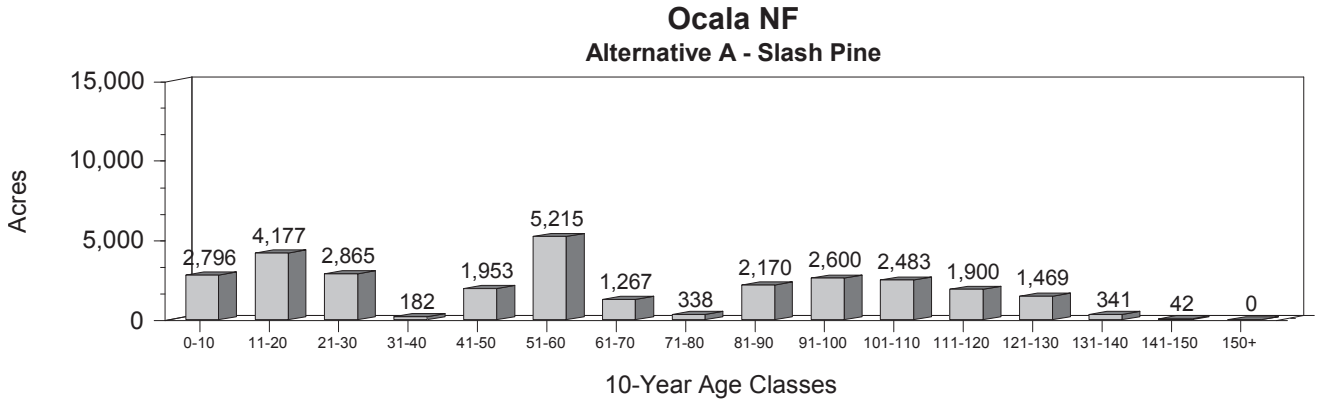

Ocala NF
Alternative A - Longleaf Pine
Acres
15,000
10,000
5,000
0
3,676
4,881
4,982
4,264
5,616
4,014
2,075
3,322
1,339
533
709
450
9,080
7,297
39
13
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

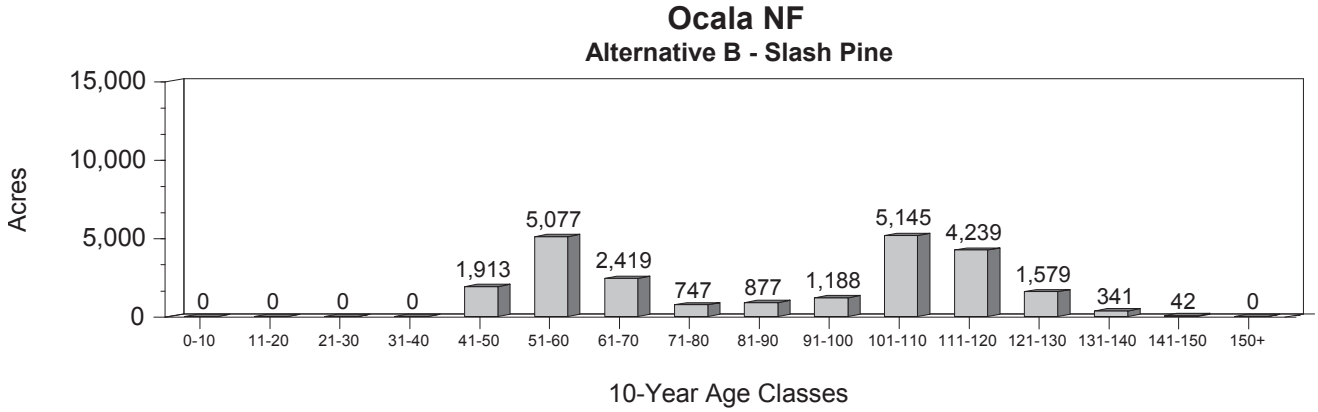

Ocala NF
Alternative B - Longleaf Pine
Acres
15,000
10,000
5,000
0
2,720
1,234
3,163
2,824
6,629
4,014
2,681
4,316
1,585
755
1,016
2,602
13,733
11,197
39
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

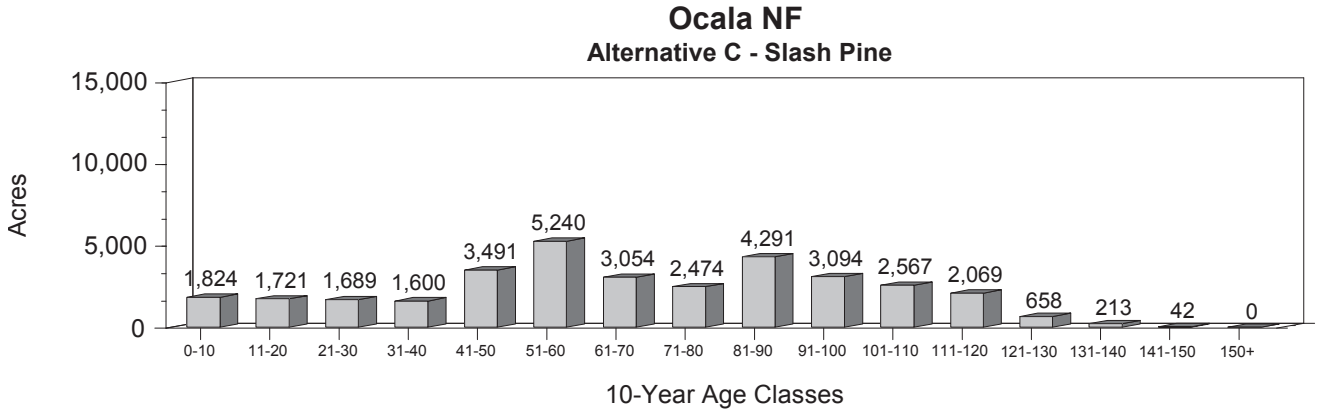

Ocala NF
Alternative C - Longleaf Pine
Acres
15,000
10,000
5,000
0
3,544
3,597
2,988
3,002
7,374
4,014
2,681
4,316
1,585
755
1,016
2,602
5,622
4,958
0
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

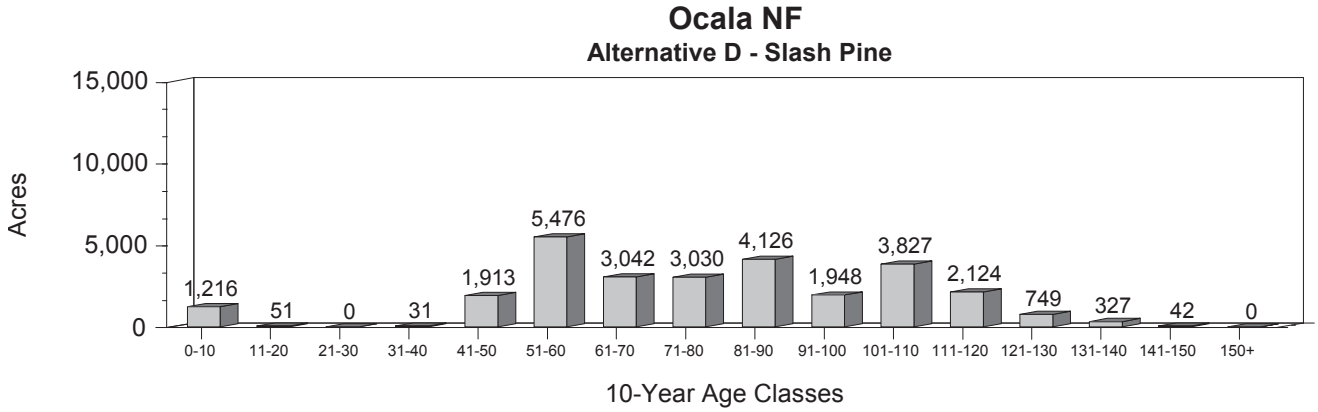

Ocala NF
Alternative D - Longleaf Pine
Acres
15,000
10,000
5,000
0
4,438
5,659
4,033
3,374
7,633
4,014
2,681
4,098
956
216
451
2,602
6,392
7,578
2
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

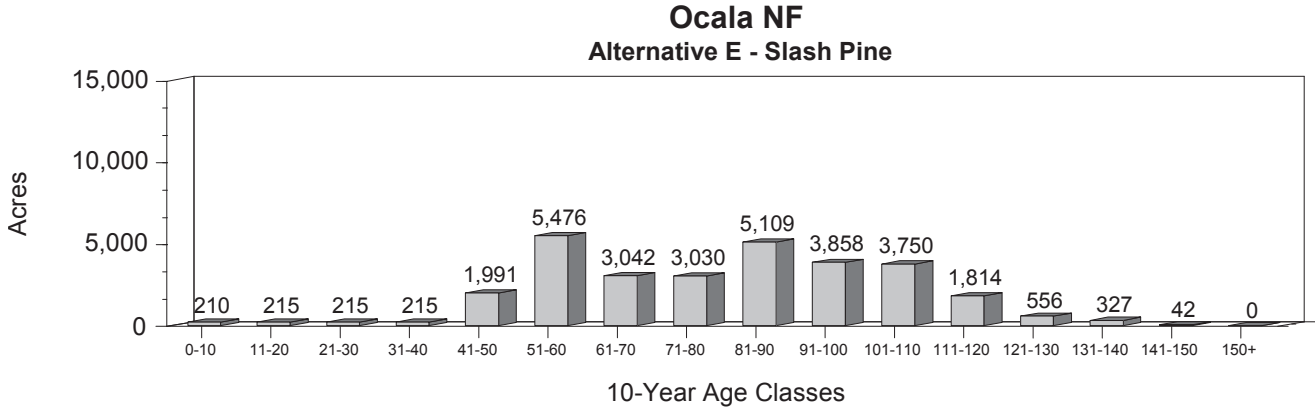

Ocala NF
Alternative E - Longleaf Pine
Acres
15,000
10,000
5,000
0
4,438
5,659
4,033
3,374
7,633
4,014
2,681
4,098
956
216
451
2,602
6,392
7,578
2
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

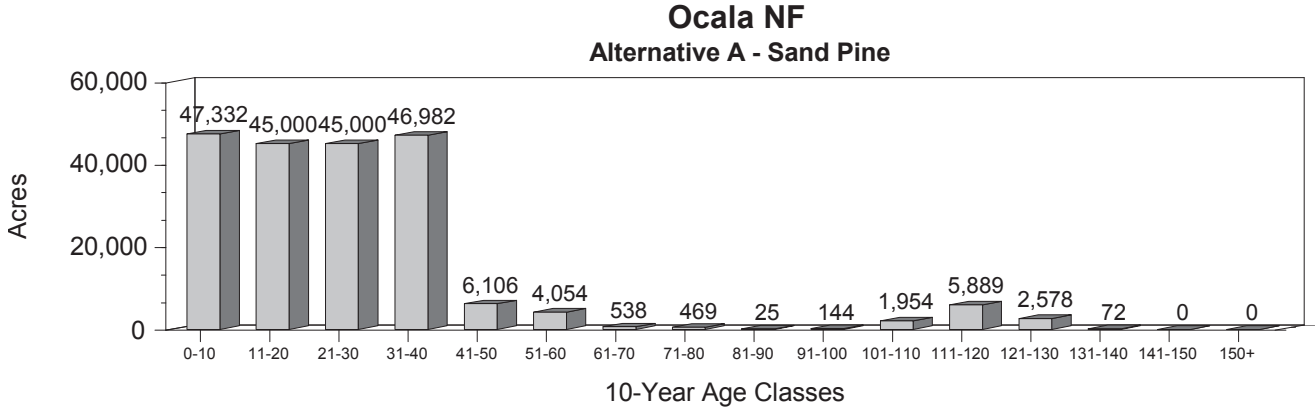

Ocala NF
Alternative A - Slash Pine
Acres
15,000
10,000
5,000
0
2,796
4,177
2,865
182
1,953
5,215
1,267
338
2,170
2,600
2,483
1,900
1,469
341
42
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

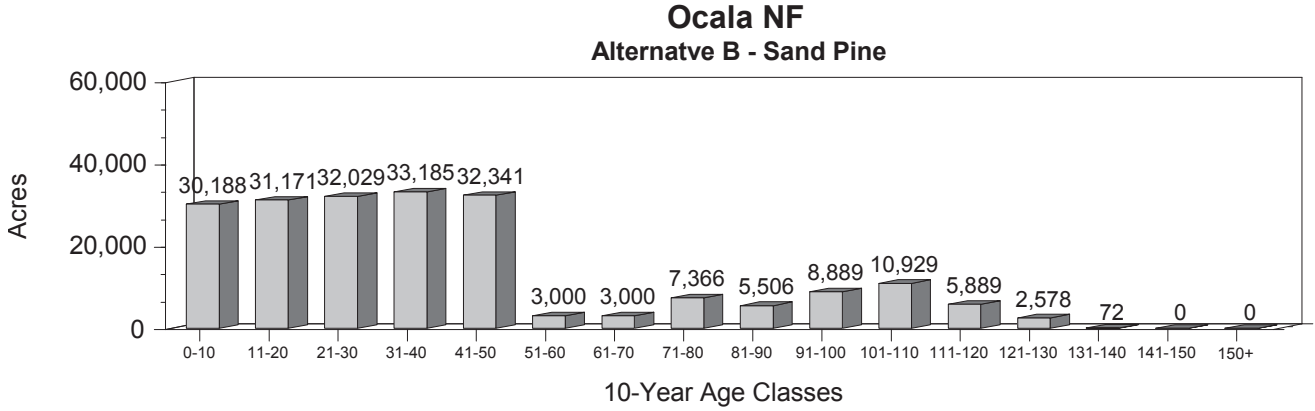

Ocala NF
Alternative B - Slash Pine
Acres
15,000
10,000
5,000
0
0
0
0
0
1,913
5,077
2,419
747
877
1,188
5,145
4,239
1,579
341
42
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

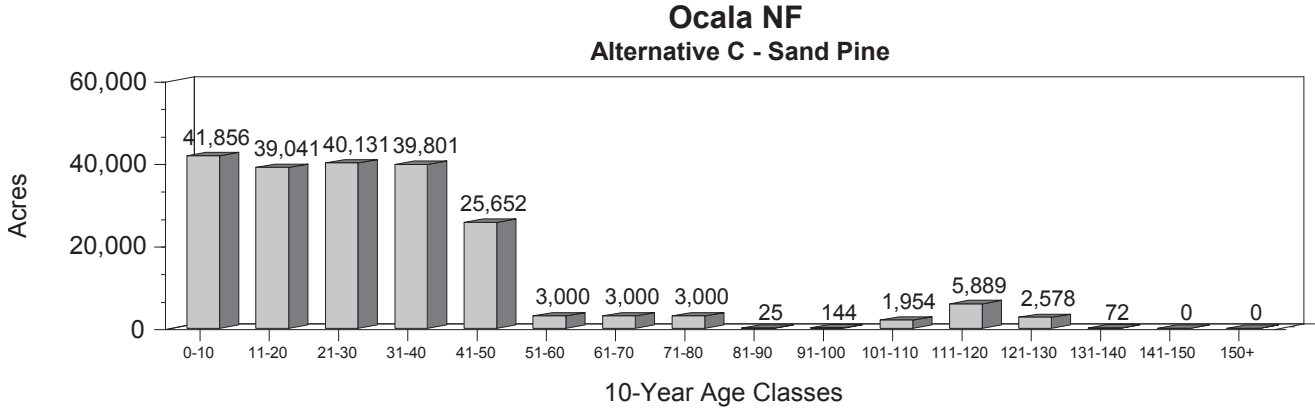

Ocala NF
Alternative C - Slash Pine
Acres
15,000
10,000
5,000
0
1,824
1,721
1,689
1,600
3,491
5,240
3,054
2,474
4,291
3,094
2,567
2,069
658
213
42
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

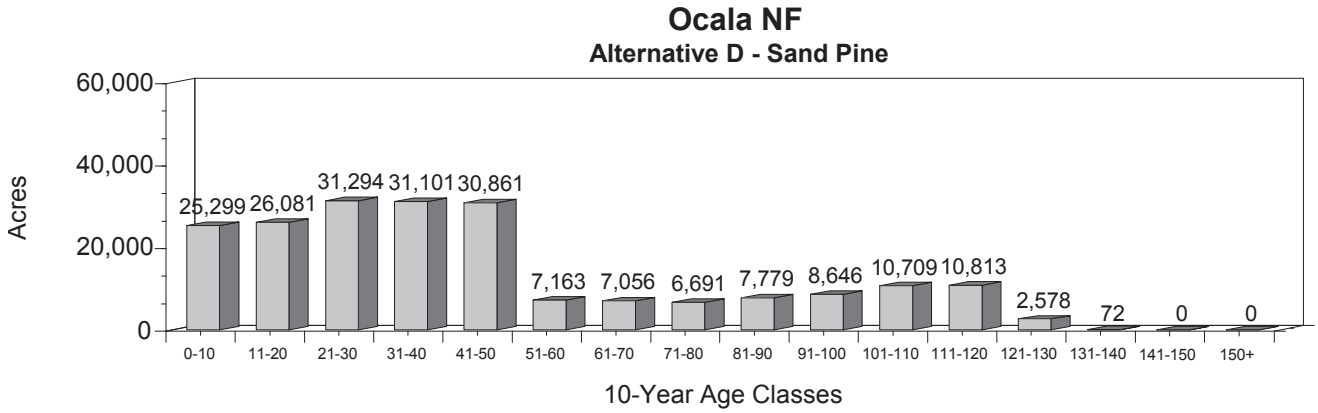

Ocala NF
Alternative D - Slash Pine
Acres
15,000
10,000
5,000
0
1,216
51
0
31
1,913
5,476
3,042
3,030
4,126
1,948
3,827
2,124
749
327
42
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

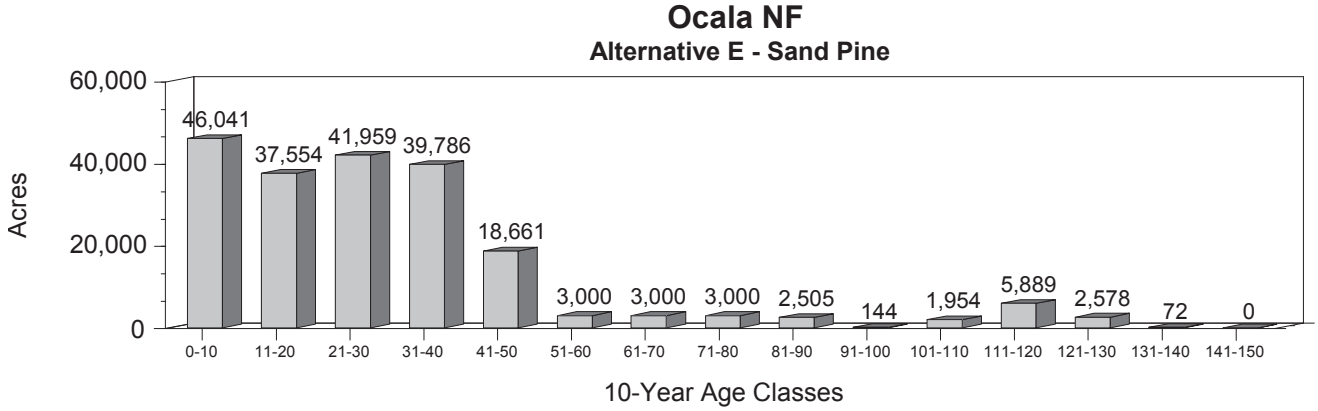

Ocala NF
Alternative E - Slash Pine
Acres
15,000
10,000
5,000
0
210
215
215
215
1,991
5,476
3,042
3,030
5,109
3,858
3,750
1,814
556
327
42
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

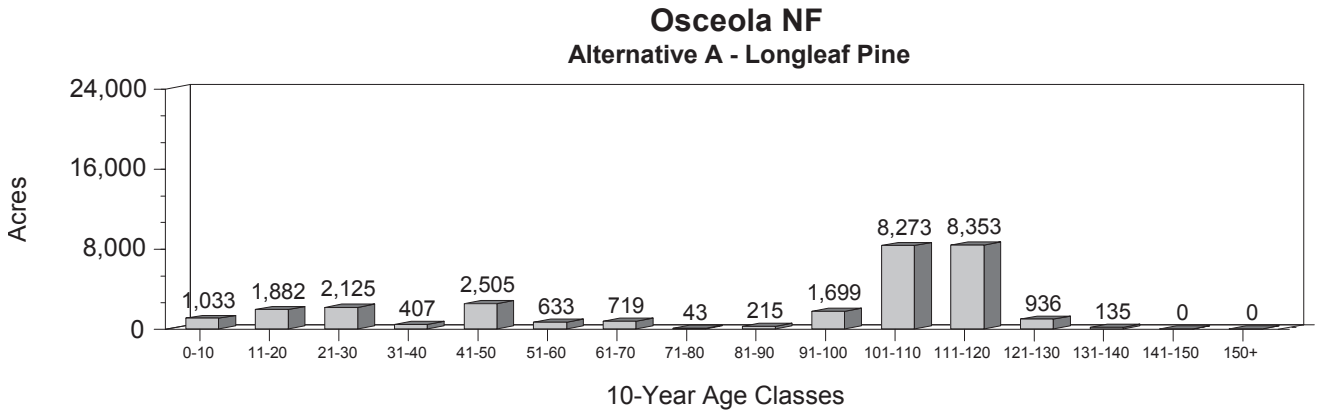

Ocala NF
Alternative A - Sand Pine
Acres
60,000
40,000
20,000
0
47,332
45,000
45,000
46,982
6,106
4,054
538
469
25
144
1,954
5,889
2,578
72
0
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

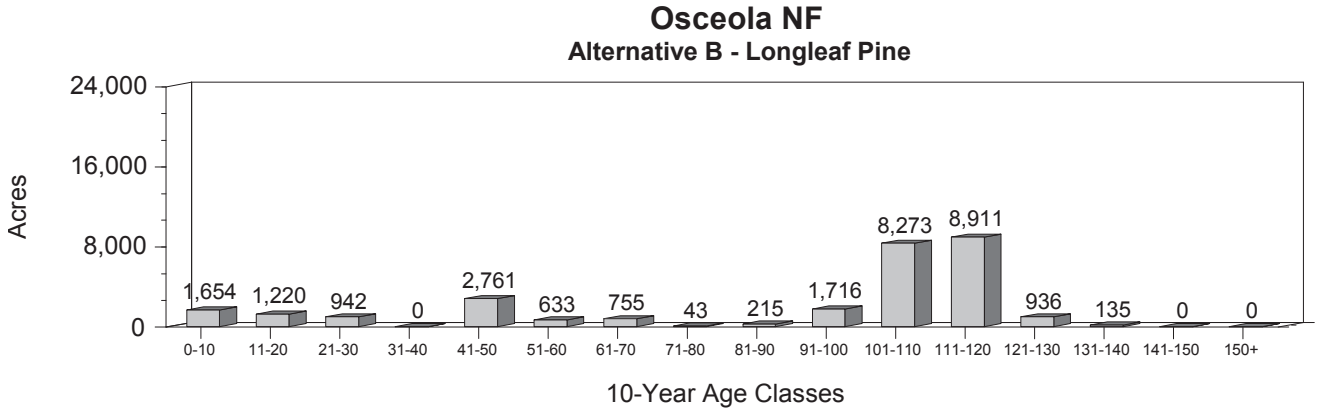

Ocala NF
Alternatve B - Sand Pine
Acres
60,000
40,000
20,000
0
30,188
31,171
32,029
33,185
32,341
3,000
3,000
7,366
5,506
8,889
10,929
5,889
2,578
72
0
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

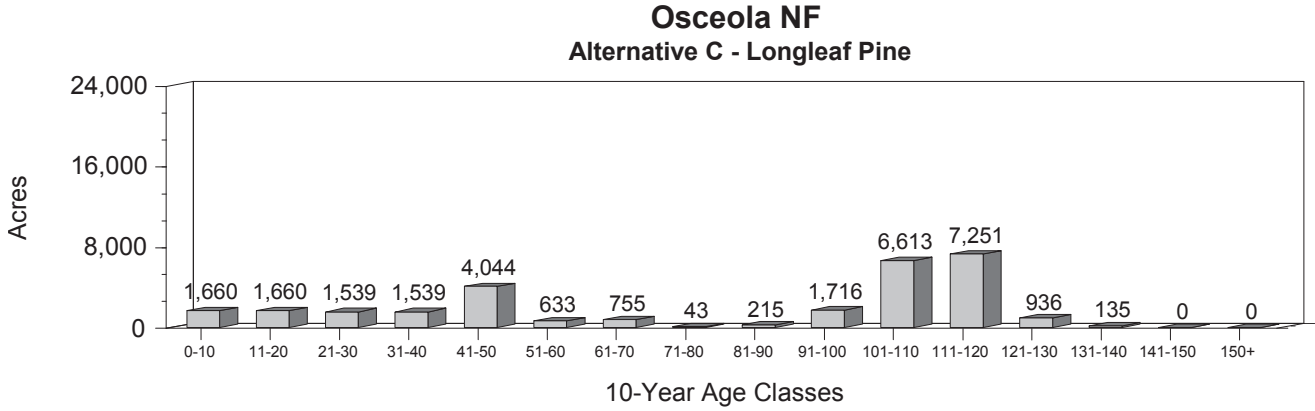

Ocala NF
Alternative C - Sand Pine
Acres
60,000
40,000
20,000
0
41,856
39,041
40,131
39,801
25,652
3,000
3,000
3,000
25
144
1,954
5,889
2,578
72
0
0
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
150+
10-Year Age Classes

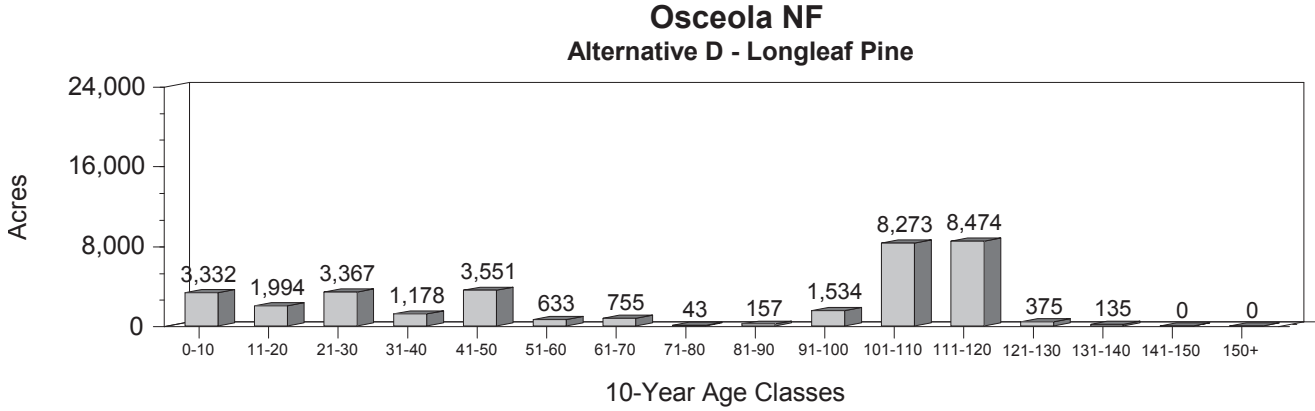

Ocala NF
Alternative D - Sand Pine
Acres
60,000
40,000
20,000
0
25,299 26,081 31,294 31,101 30,861 7,163 7,056 6,691 7,779 8,646 10,709 10,813 2,578 72 0 0
0-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130 131-140 141-150 150+
10-Year Age Classes

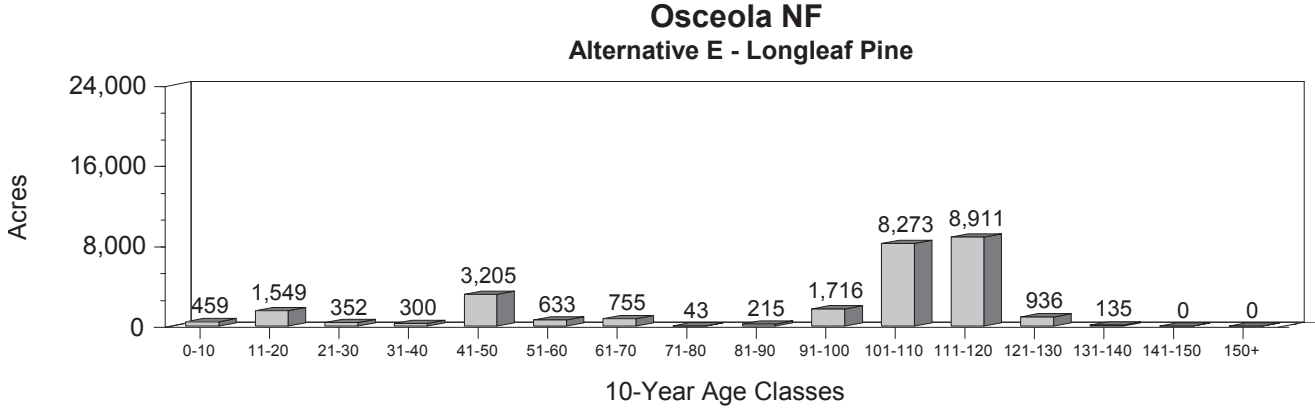

Ocala NF
Alternative E - Sand Pine
Acres
60,000
40,000
20,000
0
46,041 37,554 41,959 39,786 18,661 3,000 3,000 3,000 2,505 144 1,954 5,889 2,578 72 0
0-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130 131-140 141-150
10-Year Age Classes

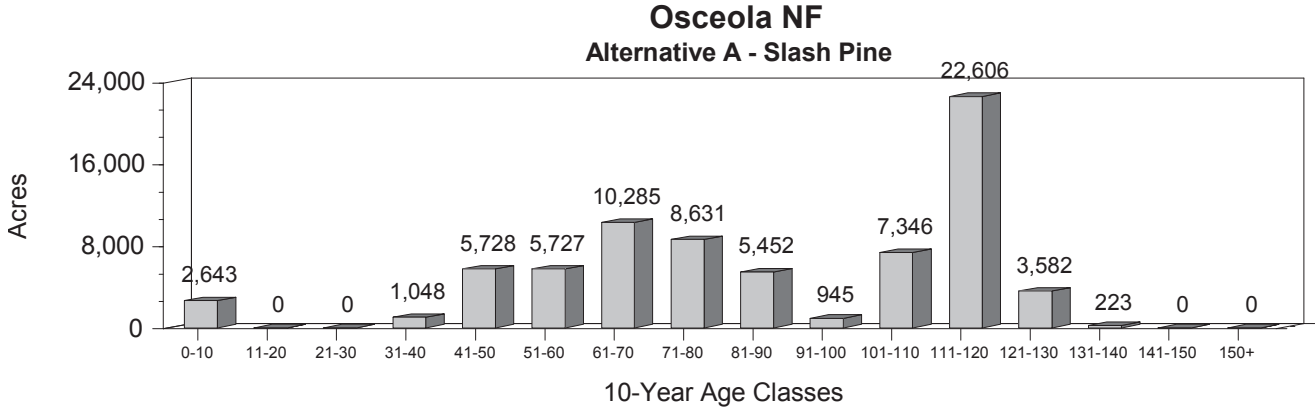

Osceola NF
Alternative A - Longleaf Pine
Acres
24,000
16,000
8,000
0
1,033 1,882 2,125 407 2,505 633 719 43 215 1,699 8,273 8,353 936 135 0 0
0-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130 131-140 141-150 150+
10-Year Age Classes


Osceola NF
Alternative B - Longleaf Pine
Acres
24,000
16,000
8,000
0
1,654 1,220 942 0 2,761 633 755 43 215 1,716 8,273 8,911 936 135 0 0
0-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130 131-140 141-150 150+
10-Year Age Classes


Osceola NF
Alternative C - Longleaf Pine
Acres
24,000
16,000
8,000
0
1,660 1,660 1,539 1,539 4,044 633 755 43 215 1,716 6,613 7,251 936 135 0 0
0-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130 131-140 141-150 150+
10-Year Age Classes


Osceola NF
Alternative D - Longleaf Pine
Acres
24,000
16,000
8,000
0
3,332 1,994 3,367 1,178 3,551 633 755 43 157 1,534 8,273 8,474 375 135 0 0
0-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130 131-140 141-150 150+
10-Year Age Classes


Osceola NF
Alternative E - Longleaf Pine
Acres
24,000
16,000
8,000
0
459 1,549 352 300 3,205 633 755 43 215 1,716 8,273 8,911 936 135 0 0
0-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130 131-140 141-150 150+
10-Year Age Classes


Osceola NF
Alternative A - Slash Pine
Acres
24,000
16,000
8,000
0
2,643 0 0 1,048 5,728 5,727 10,285 8,631 5,452 945 7,346 22,606 3,582 223 0 0
0-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100 101-110 111-120 121-130 131-140 141-150 150+
10-Year Age Classes

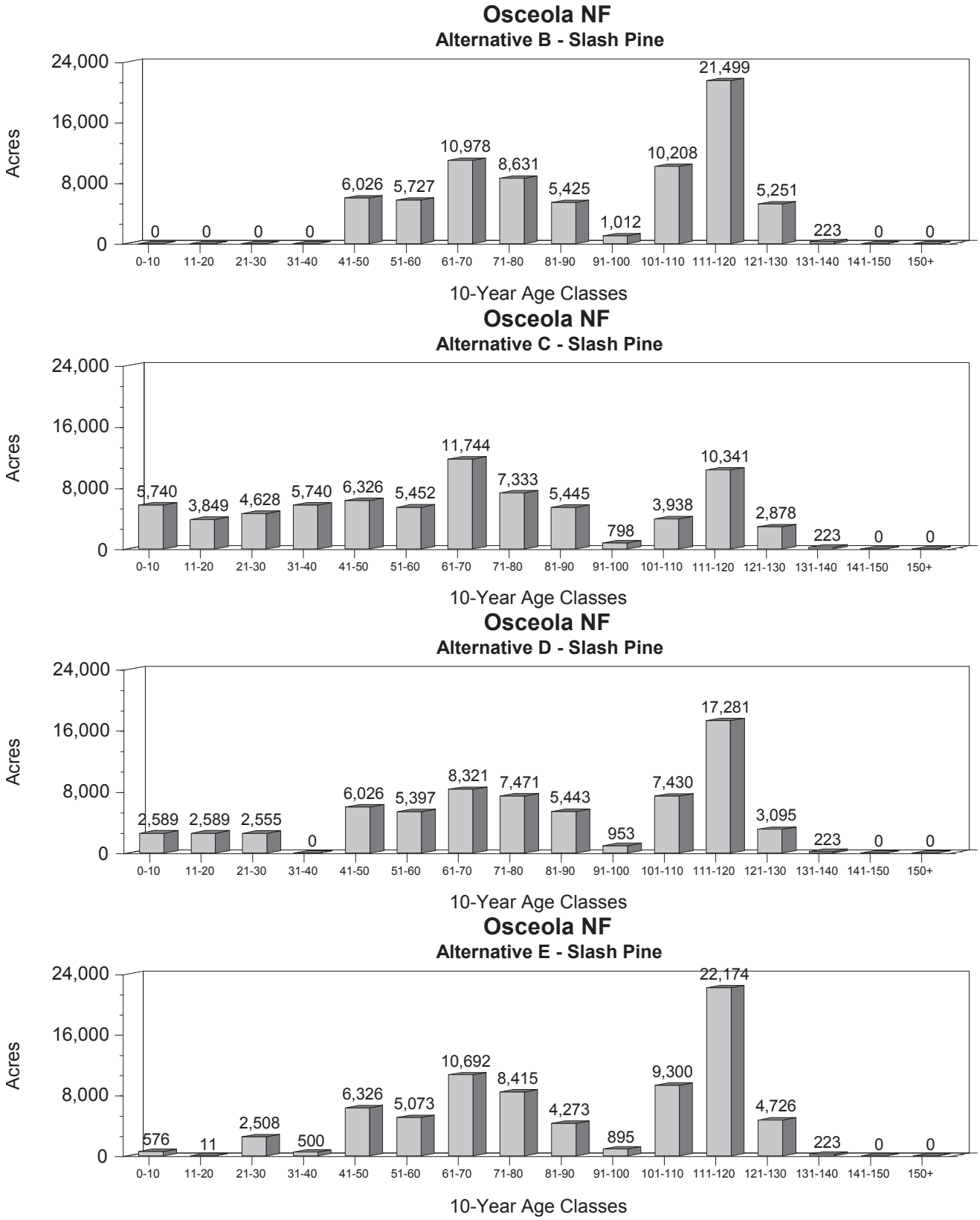


Figure 3.7. Age Class Distributions of Pine Forest Types at the End of 50 Years.

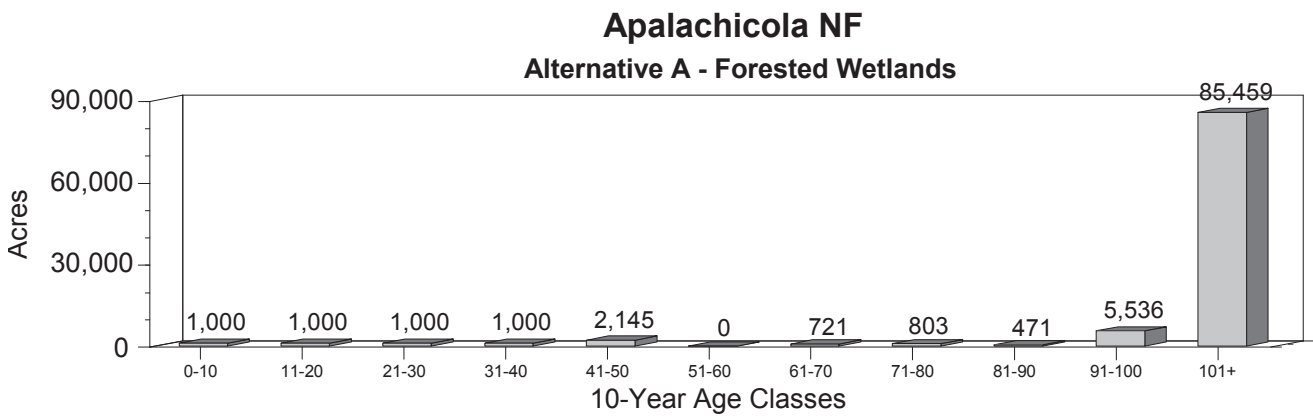
The age class distributions for alternatives with group selection harvest (Alternatives B, D, and E) reflect the oldest ages of stands in longleaf/slash pine forests.

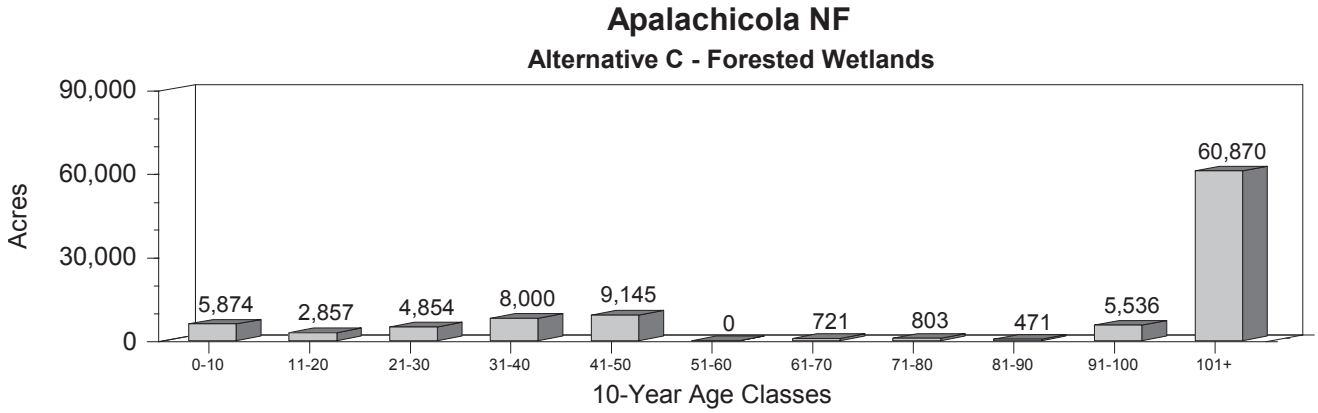
In Alternative B, on the Apalachicola NF, there would be 55,141 acres under uneven-aged management with 26,047 acres containing at least three age classes, 14,865 acres with at least two age classes, and 14,229 acres of initial group selection harvest. On the Ocala NF, there would be 20,662 acres under uneven-aged management with 2,228 acres containing at least three age classes, 12,414 acres with at least two age classes, and 6,020 acres of initial group selection harvest. On the Osceola NF, there would be 8,898 acres under uneven-aged management with 4,280 acres containing at least three age classes, 494 acres containing at least two age classes, and 4,124 acres of initial group selection harvest.

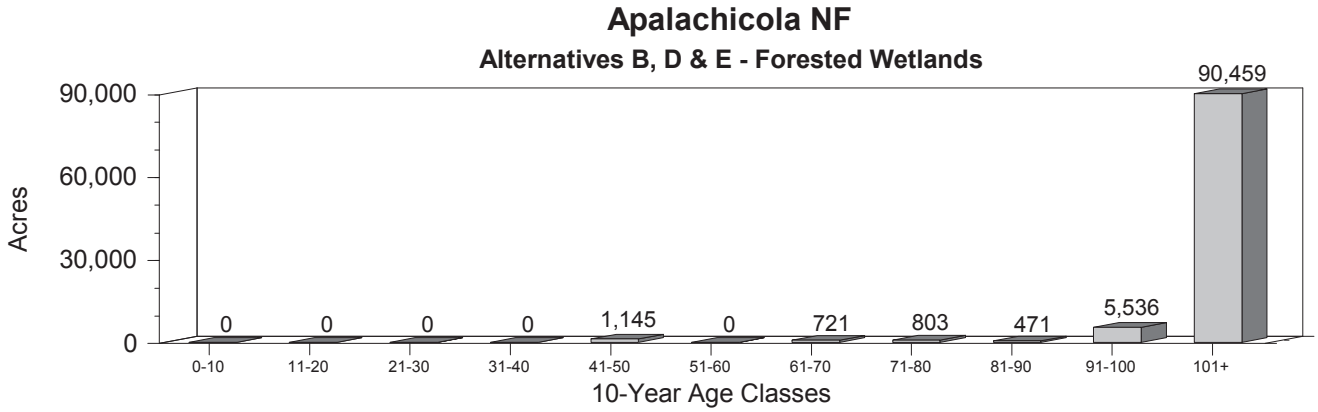
In Alternative D, on the Apalachicola NF, there would be 15,221 acres under uneven-aged management with 6,651 acres containing at least three age classes, 3,966 acres containing at least two age classes, and 4,604 acres of initial group selection harvest. On the Ocala NF, there would not be any acres under uneven-aged management. On the Osceola NF, there would be 10,252 acres under uneven-aged management with 1,800 acres containing at least three age classes, 3,770 acres containing at least two age classes, and 4,682 acres of initial group selection harvest.

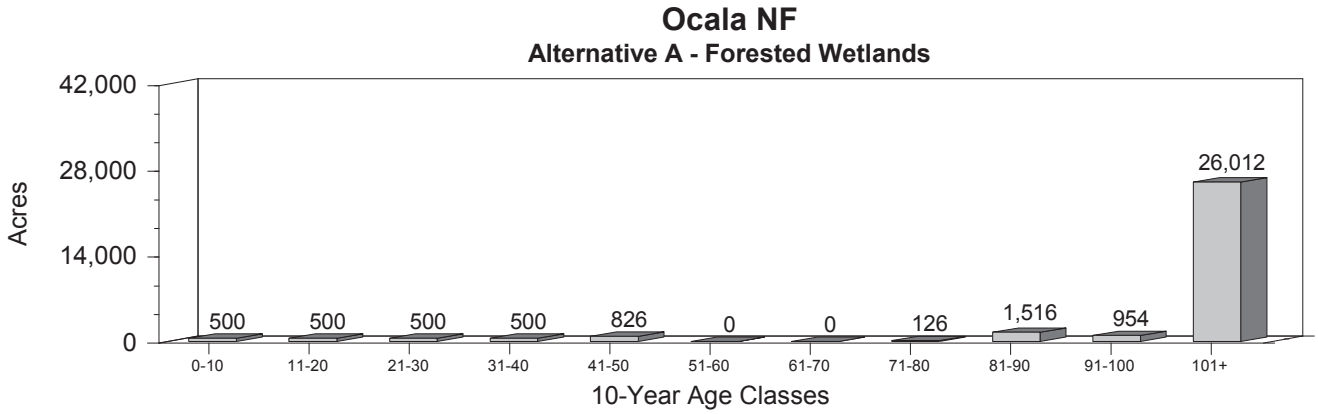
In Alternative E, on the Apalachicola NF, there would be 90,074 acres under uneven-aged management with 54,244 acres containing at least three age classes, 21,329 containing at least two age classes, and 14,501 acres of initial group selection harvest. On the Ocala NF, there would be 16,169 acres under uneven-aged management with 5,000 acres containing at least three age classes, 9,141 acres containing at least two age classes, and 2,028 acres of initial group selection harvest. On the Osceola NF, there would be 19,935 acres under uneven-aged management with 2,000 acres containing at least three age classes, 9,164 acres containing at least two age classes, and 8,771 acres of initial group selection harvest.

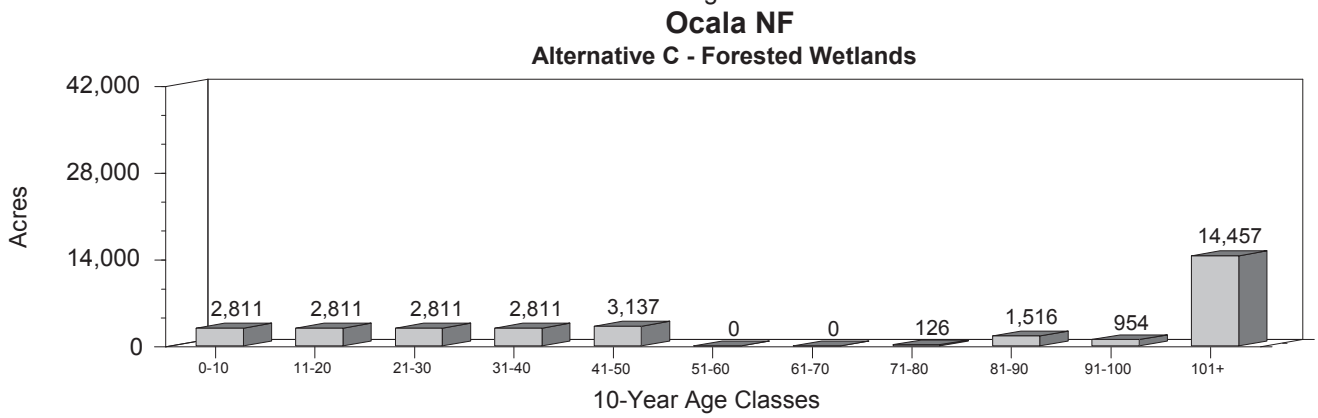
Figure 3.8 (pages 48-50) shows the age class distributions of forested wetlands at the end of 50 years.

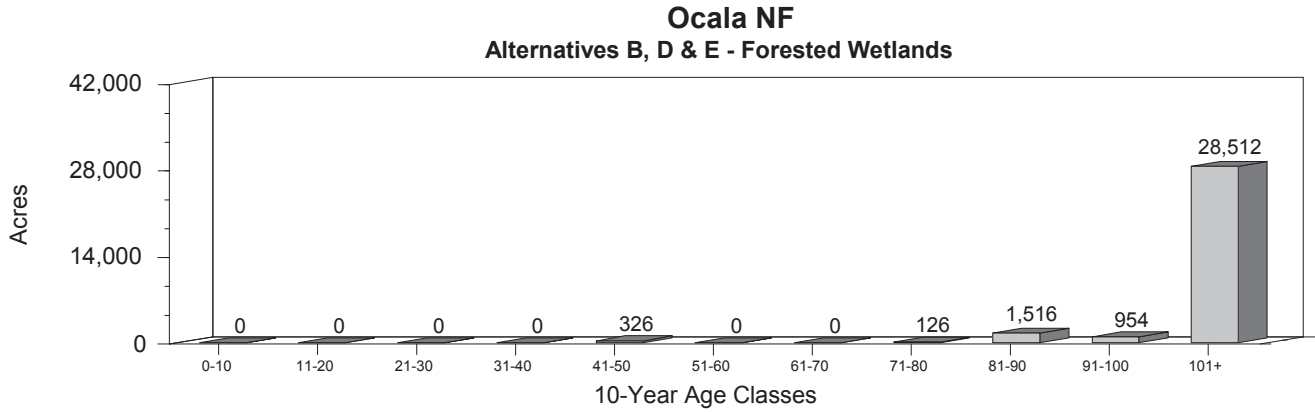


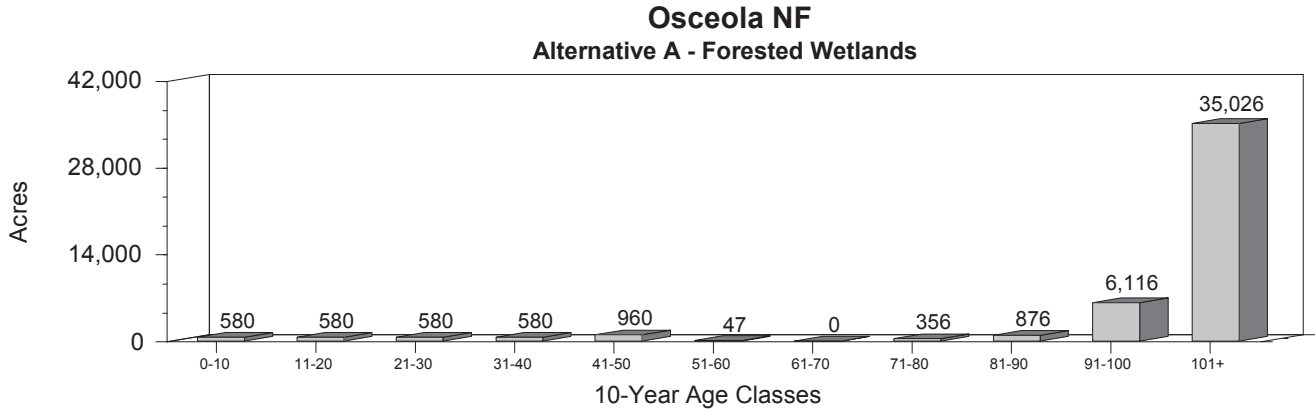

Apalachicola NF
Alternative C - Forested Wetlands
Acres
90,000
60,000
30,000
0
5,874
2,857
4,854
8,000
9,145
0
721
803
471
5,536
60,870
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101+
10-Year Age Classes

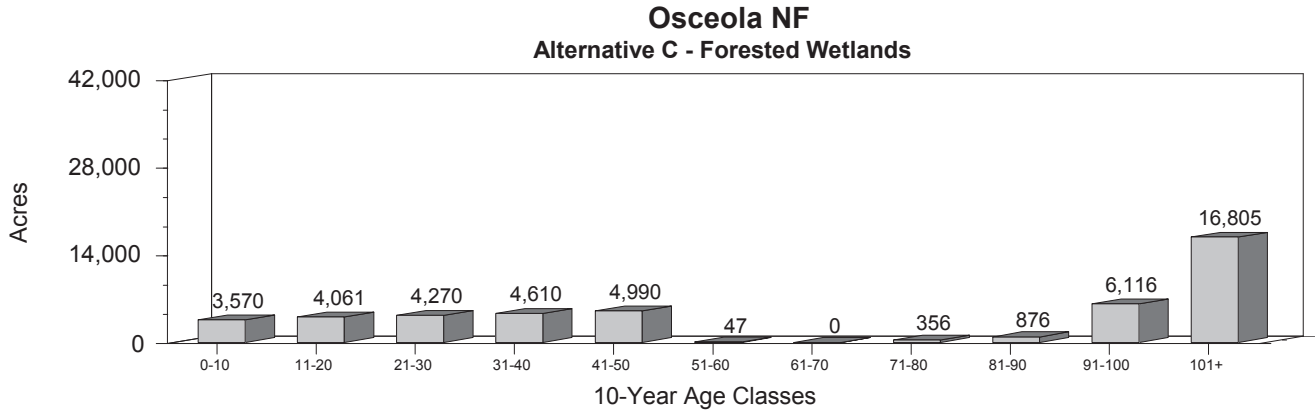

Apalachicola NF
Alternatives B, D & E - Forested Wetlands
Acres
90,000
60,000
30,000
0
0
0
0
0
1,145
0
721
803
471
5,536
90,459
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101+
10-Year Age Classes


Ocala NF
Alternative A - Forested Wetlands
Acres
42,000
28,000
14,000
0
500
500
500
500
826
0
0
126
1,516
954
26,012
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101+
10-Year Age Classes


Ocala NF
Alternative C - Forested Wetlands
Acres
42,000
28,000
14,000
0
2,811
2,811
2,811
2,811
3,137
0
0
126
1,516
954
14,457
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101+
10-Year Age Classes


Ocala NF
Alternatives B, D & E - Forested Wetlands
Acres
42,000
28,000
14,000
0
0
0
0
0
326
0
0
126
1,516
954
28,512
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101+
10-Year Age Classes


Osceola NF
Alternative A - Forested Wetlands
Acres
42,000
28,000
14,000
0
580
580
580
580
960
47
0
356
876
6,116
35,026
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101+
10-Year Age Classes


Osceola NF
Alternative C - Forested Wetlands
Acres
42,000
28,000
14,000
0
3,570
4,061
4,270
4,610
4,990
47
0
356
876
6,116
16,805
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101+
10-Year Age Classes

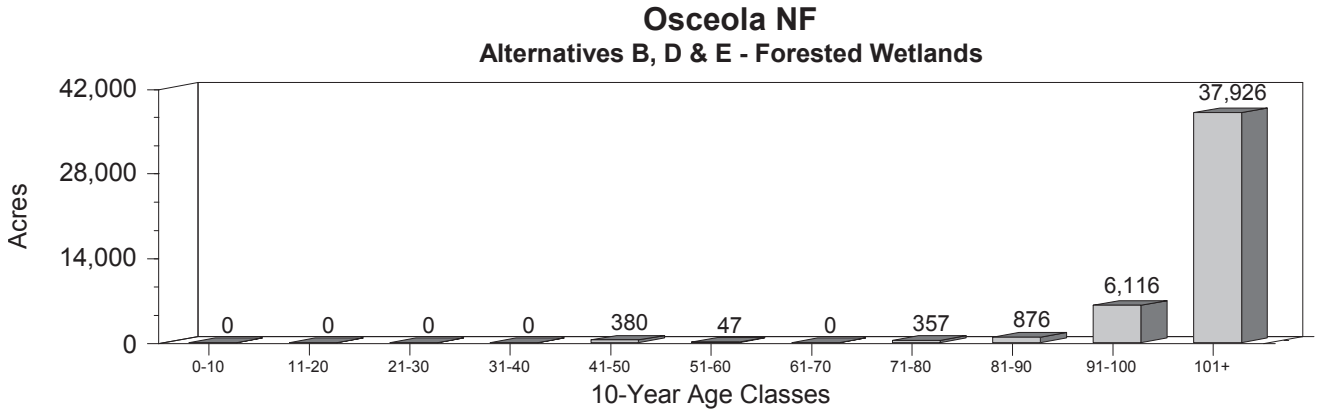
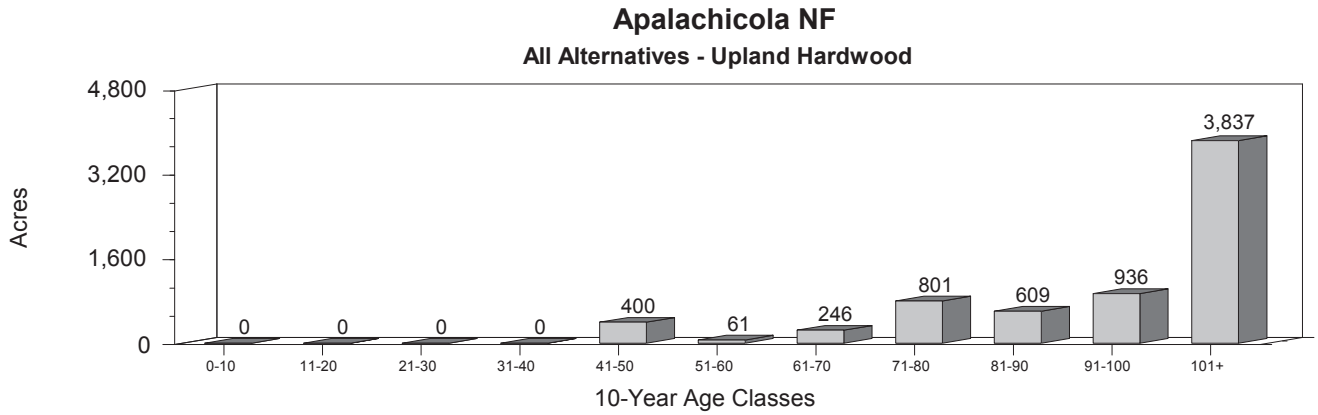
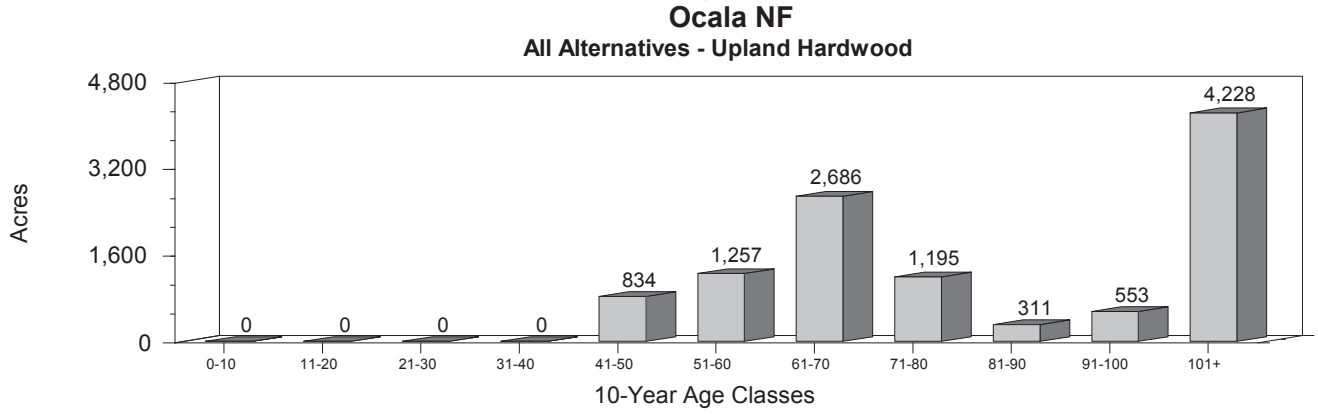


Figure 3.8. Age Class Distributions of Forested Wetlands at the End of 50 Years.

Figure 3.9 shows the age class distributions of upland hardwood at the end of 50 years.





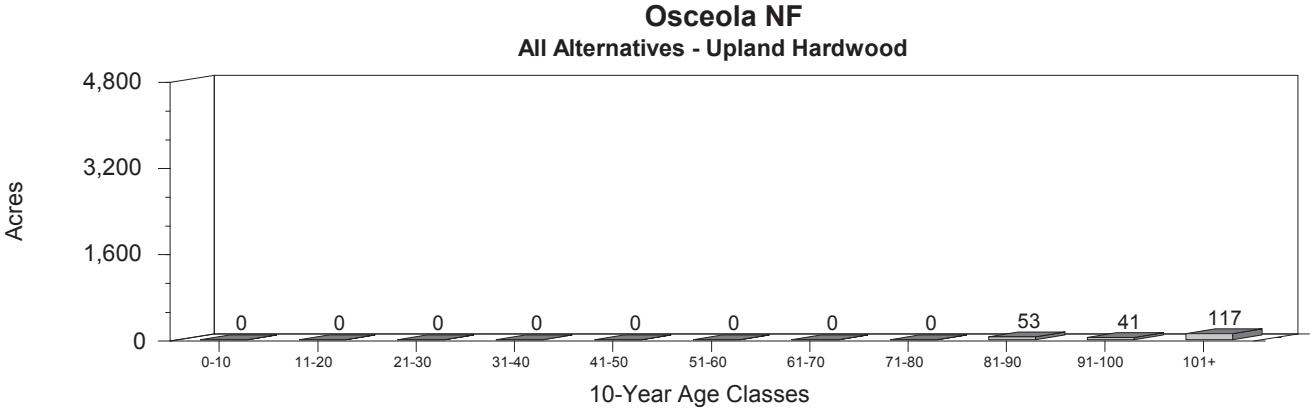


Figure 3.9. Age Class Distributions of Upland Hardwood at the End of 50 Years.

Figures 3.7-3.9 give an indication of the possible old growth based on age classes by broad forest type in each alternative. In 50 years, Alternative A would have the following acres over the minimum age: longleaf pine - 99,901 acres; slash pine - 89,494 acres; forested wetlands - 116,673 acres; and upland hardwood - 8,182 acres. Alternative B would have the following acres over the minimum age: longleaf pine - 132,588 acres; slash pine - 117,188 acres; forested wetlands - 131,073 acres; and upland hardwood - 8,182 acres. Alternative C would have the following acres over the minimum age: longleaf pine - 101,618 acres; slash pine - 59,220 acres; forested wetlands - 62,312 acres; and upland hardwood - 8,182 acres. Alternative D would have the following acres over minimum age: longleaf pine - 111,275 acres; slash pine - 98,222 acres; forested wetlands - 131,073 acres; and upland hardwood - 8,182 acres. Alternative E would have the following acres over the minimum age: longleaf pine - 121,591 acres; slash pine - 105,082 acres; forested wetlands - 131,073 acres; and upland hardwood - 8,182 acres. Table 3.10 shows future possible old growth by alternative. Total possible old growth includes stands over the minimum age in areas suitable for timber production and stands over or under the minimum age in areas unsuitable for timber production. Most of the unsuitable lands in each alternative can be expected to develop old-growth characteristics. Some of those acres are in recreation areas and administrative sites which would not retain those characteristics.

Table 3.10 Table 3.37

Future Possible Old Growth by Alternative

	Alternative A			
	Over Minimum Age Suitable	**Over Minimum Age Unsuitable**	**Under Minimum Age Unsuitable**	**Total Possible**
Apalachicola NF				
Upland Longleaf Pine Forest	3,024	328	6,771	10,123
Southern Wet Pine Forest, Woodland, and Savannah	2,950	2,101	8,126	13,177
Cypress/Tupelo Swamp Forest	134	3,102	374	3,610
River Floodplain Hardwood Forest	961	261	933	2,155
Hardwood Wetland Forest	1,357	0	2,709	4,066
Dry and Dry Mesic Oak/Pine Forest	53	0	201	254
Coastal Plain Upland Mesic Hardwood Forest	77	0	32	109
Dry and Xeric Oak Forest, Woodland,	434	0	47	481

and Savannah				
Subtotal	**8,990**	**5,792**	**19,193**	**33,975**
Ocala NF				
Upland Longleaf Pine Forest	1,846	182	74	2,102
Southern Wet Pine Forest, Woodland, and Savannah	73	347	49	469
Cypress/Tupelo Swamp Forest		0	362	362
River Floodplain Hardwood Forest		0	1,102	1,102
Hardwood Wetland Forest	142	7,703	2,347	10,192
Dry and Dry Mesic Oak/Pine Forest		0	32	32
Coastal Plain Upland Mesic Hardwood Forest	274	67	48	389
Dry and Xeric Oak Forest, Woodland, and Savannah	112	450	82	644
Subtotal	**2,447**	**8,749**	**4,096**	**15,292**
Osceola NF				
Upland Longleaf Pine Forest	444	0	263	707
Southern Wet Pine Forest, Woodland, and Savannah	564	24	1,629	2,217
Cypress/Tupelo Swamp Forest	333	0	9,011	9,344
River Floodplain Hardwood Forest	41	0	44	85
Hardwood Wetland Forest		0	1,886	1,886
Dry and Dry Mesic Oak/Pine Forest		0	0	0
Coastal Plain Upland Mesic Hardwood Forest		0	0	0
Dry and Xeric Oak Forest, Woodland, and Savannah	0	0	0	0
Subtotal	**1,382**	**24**	**12,833**	**14,239**
TOTAL	**12,819**	**14,565**	**36,122**	**63,506**

Table 3.10 (cont.)

	Alternative B			
	Over Minimum Age Suitable	**Over Minimum Age Unsuitable**	**Under Minimum Age Unsuitable**	**Total Possible**
Apalachicola NF				
Upland Longleaf Pine Forest	2,195	1,158	22,646	25,999
Southern Wet Pine Forest, Woodland, and Savannah	2,509	2,542	10,411	15,462
Cypress/Tupelo Swamp Forest		3,236	40,165	43,401
River Floodplain Hardwood Forest		1,223	10,870	12,093
Hardwood Wetland Forest		1,357	39,763	41,120
Dry and Dry Mesic Oak/Pine Forest		53	2,009	2,062
Coastal Plain Upland Mesic Hardwood Forest		78	1,446	1,524
Dry and Xeric Oak Forest, Woodland, and Savannah	0	434	2,632	3,066
Subtotal	**4,704**	**10,081**	**129,942**	**144,727**
Ocala NF				
Upland Longleaf Pine Forest	1,846	183	189	2,218
Southern Wet Pine Forest, Woodland, and Savannah	70	351	165	586
Cypress/Tupelo Swamp Forest		0	2,105	2,105
River Floodplain Hardwood Forest		0	2,761	2,761
Hardwood Wetland Forest		7,845	14,681	22,526
Dry and Dry Mesic Oak/Pine Forest		0	515	515

Coastal Plain Upland Mesic Hardwood Forest		341	2,519	2,860
Dry and Xeric Oak Forest, Woodland, and Savannah	0	562	3,431	3,993
Subtotal	**1,916**	**9,282**	**26,366**	**37,564**
Osceola NF				
Upland Longleaf Pine Forest	444	0	238	682
Southern Wet Pine Forest, Woodland, and Savannah	573	15	1,142	1,730
Cypress/Tupelo Swamp Forest		744	34,727	35,471
River Floodplain Hardwood Forest		178	3,042	3,220
Hardwood Wetland Forest		0	6,342	6,342
Dry and Dry Mesic Oak/Pine Forest		0	83	83
Coastal Plain Upland Mesic Hardwood Forest		0	38	38
Dry and Xeric Oak Forest, Woodland, and Savannah	0	0	54	54
Subtotal	**1,017**	**937**	**45,666**	**47,620**
TOTAL	**7,637**	**20,300**	**201,974**	**229,911**

Table 3.10 (cont.)

	Alternative C			
	Over Minimum Age Suitable	**Over Minimum Age Unsuitable**	**Under Minimum Age Unsuitable**	**Total Possible**
Apalachicola NF				
Upland Longleaf Pine Forest	3,024	329	4,544	7,897
Southern Wet Pine Forest, Woodland, and Savannah	2,950	2,101	7,813	12,864
Cypress/Tupelo Swamp Forest	134	3,102	374	3,610
River Floodplain Hardwood Forest	961	261	933	2,155
Hardwood Wetland Forest	1,357	0	2,709	4,066
Dry and Dry Mesic Oak/Pine Forest	53	0	201	254
Coastal Plain Upland Mesic Hardwood Forest	78	0	32	110
Dry and Xeric Oak Forest, Woodland, and Savannah	434	0	47	481
Subtotal	**8,991**	**5,793**	**16,653**	**31,437**
Ocala NF				
Upland Longleaf Pine Forest	1,846	183	74	2,103
Southern Wet Pine Forest, Woodland, and Savannah	74	347	50	471
Cypress/Tupelo Swamp Forest		0	363	363
River Floodplain Hardwood Forest			1,102	1,102
Hardwood Wetland Forest	142	7,703	2,347	10,192
Dry and Dry Mesic Oak/Pine Forest		0	32	32
Coastal Plain Upland Mesic Hardwood Forest	274	67	48	389
Dry and Xeric Oak Forest, Woodland, and Savannah	112	450	204	766
Subtotal	**2,448**	**8,750**	**4,220**	**15,418**
Osceola NF				
Upland Longleaf Pine Forest	444	0	238	682

Table 3.10 (cont.)

Southern Wet Pine Forest, Woodland, and Savannah	578	10	991	1,579
Cypress/Tupelo Swamp Forest	743	0	6,926	7,669
River Floodplain Hardwood Forest	178	0	0	178
Hardwood Wetland Forest		0	1,228	1,228
Dry and Dry Mesic Oak/Pine Forest		0	0	0
Coastal Plain Upland Mesic Hardwood Forest		0	0	0
Dry and Xeric Oak Forest, Woodland, and Savannah	0	0	0	0
Subtotal	**1,943**	**10**	**9,383**	**11,336**
TOTAL	**13,382**	**14,553**	**30,256**	**58,191**

Table 3.10 (cont.)

	Alternative D			
	Over Minimum Age Suitable	**Over Minimum Age Unsuitable**	**Under Minimum Age Unsuitable**	**Total Possible**
Apalachicola NF				
Upland Longleaf Pine Forest	2,862	490	19,035	22,387
Southern Wet Pine Forest, Woodland, and Savannah	2,541	2,510	16,256	21,307
Cypress/Tupelo Swamp Forest		3,236	40,165	43,401
River Floodplain Hardwood Forest		1,223	10,870	12,093
Hardwood Wetland Forest		1,357	39,763	41,120
Dry and Dry Mesic Oak/Pine Forest		53	2,009	2,062
Coastal Plain Upland Mesic Hardwood Forest		78	1,446	1,524
Dry and Xeric Oak Forest, Woodland, and Savannah	0	434	2,632	3,066
Subtotal	**5,403**	**9,381**	**132,176**	**146,960**
Ocala NF				
Upland Longleaf Pine Forest	1,544	485	1,391	3,420
Southern Wet Pine Forest, Woodland, and Savannah	36	385	2,178	2,599
Cypress/Tupelo Swamp Forest		0	2,105	2,105
River Floodplain Hardwood Forest		0	2,761	2,761
Hardwood Wetland Forest		7,845	14,681	22,526
Dry and Dry Mesic Oak/Pine Forest		0	515	515
Coastal Plain Upland Mesic Hardwood Forest		341	2,519	2,860
Dry and Xeric Oak Forest, Woodland, and Savannah	0	562	3,431	3,993
Subtotal	**1,580**	**9,618**	**29,581**	**40,779**
Osceola NF				
Upland Longleaf Pine Forest	368	76	831	1,275
Southern Wet Pine Forest, Woodland, and Savannah	471	117	2,659	3,247
Cypress/Tupelo Swamp Forest		744	34,727	35,471
River Floodplain Hardwood Forest		178	3,042	3,220
Hardwood Wetland Forest		0	6,342	6,342

Table 3.10 (cont.)

Dry and Dry Mesic Oak/Pine Forest		0	83	83
Coastal Plain Upland Mesic Hardwood Forest		0	38	38
Dry and Xeric Oak Forest, Woodland, and Savannah	0	0	54	54
Subtotal	**839**	**1,115**	**47,776**	**49,730**
TOTAL	**7,822**	**20,114**	**209,533**	**237,469**

Table 3.10 (cont.)

	Alternative E			
	Over Minimum Age Suitable	**Over Minimum Age Unsuitable**	**Under Minimum Age Unsuitable**	**Total Possible**
Apalachicola NF				
Upland Longleaf Pine Forest	2,990	362	7,240	10,592
Southern Wet Pine Forest, Woodland, and Savannah	3,089	1,962	7,969	13,020
Cypress/Tupelo Swamp Forest		3,236	40,165	43,401
River Floodplain Hardwood Forest		1,223	10,870	12,093
Hardwood Wetland Forest		1,357	39,763	41,120
Dry and Dry Mesic Oak/Pine Forest		53	2,009	2,062
Coastal Plain Upland Mesic Hardwood Forest		79	1,445	1,524
Dry and Xeric Oak Forest, Woodland, and Savannah	0	428	2,638	3,066
Subtotal	**6,079**	**8,700**	**112,099**	**126,878**
Ocala NF				
Upland Longleaf Pine Forest	1,846	183	113	2,142
Southern Wet Pine Forest, Woodland, and Savannah	56	366	95	517
Cypress/Tupelo Swamp Forest		0	2,105	2,105
River Floodplain Hardwood Forest		0	2,761	2,761
Hardwood Wetland Forest		7,845	14,681	22,526
Dry and Dry Mesic Oak/Pine Forest		0	515	515
Coastal Plain Upland Mesic Hardwood Forest		341	2,519	2,860
Dry and Xeric Oak Forest, Woodland, and Savannah	0	562	10,911	11,473
Subtotal	**1,902**	**9,297**	**33,700**	**44,899**
Osceola NF				
Upland Longleaf Pine Forest	410	34	776	1,220
Southern Wet Pine Forest, Woodland, and Savannah	557	28	1,758	2,343
Cypress/Tupelo Swamp Forest		744	34,727	35,471
River Floodplain Hardwood Forest		178	3,042	3,220
Hardwood Wetland Forest		0	6,342	6,342
Dry and Dry Mesic Oak/Pine Forest		0	83	83
Coastal Plain Upland Mesic Hardwood Forest		0	38	38
Dry and Xeric Oak Forest, Woodland, and Savannah	0	0	54	54
Subtotal	**967**	**984**	**46,820**	**48,771**

Table 3.10 (cont.)

TOTAL	8,948	18,981	192,619	220,548

Alternative A. In this alternative, RCW HMA constraints on timber harvesting activities in longleaf and slash pine suitable acres would affect the largest number of acres, because this alternative proposes the largest RCW HMAs. Inside RCW HMAs, the interim guidelines for RCW management would be followed. This means that every active and inactive RCW cluster would be assigned two concentric zones. The inner zone is a circle that includes all acres within ¼ mile of the RCW cluster. This amounts to about 20 percent of the longleaf and slash pine suitable acres on the national forest lands in Florida. The outer zone is the ``donut'' of acres between ¼ and ¾ mile of the cluster. This accounts for an additional 45 percent of the longleaf and slash pine suitable acres. Inside the inner circle, openings would not be created, except where off-site slash pine would be clearcut and replanted to longleaf pine. Stands of on-site trees could be thinned, but regeneration cuts (openings designed to grow up a new generation of trees) would not occur. In the ¾-mile donut, stands that are now in the oldest third of the age class distribution would never be cut. In the younger two-thirds, off-site slash pine would be replaced by longleaf pine and even-aged regeneration cuts of on-site species would occur. The opening sizes for these would not exceed 25-40 acres; overstory trees would be retained on the site (i.e., irregular shelterwood cuts). Rotations ages would be 120 years for longleaf and slash pine. Outside the ¾-mile zone but still inside an RCW HMA, type conversions would occur from off-site slash pine to longleaf pine and irregular shelterwood cuts in on-site species. Opening sizes could be up to 80 acres. Rotation ages would be 80 and 60 years for longleaf and slash pine, respectively.

In 50 years, a third of the suitable longleaf and slash pine acres would still be young longleaf pine stands. By contrast, another third—consisting of the on-site species inside the ¼-mile circles and the oldest third of the stands in the ¾-mile donuts—would not receive a final harvest, so they would be 50 years older. Some of these stands would be off-site slash pine that would not be converted to longleaf pine. The remaining third (i.e., on-site species in those areas where regeneration harvests may occur) would be split between stands on a longer rotation (120 years) and stands on shorter rotations (60-80 years). To establish longer rotations from the current situation of shorter rotation, very little of this sort of harvesting would have occurred in the initial 20 years, but after 30 years, some stands would have begun to have regeneration harvest of this sort. These would be found in various early stages of regrowth, with the new generation forming an understory under the overstory remnants of the last generation. More such cutting would have occurred farther from RCW clusters, since this is where the rotations are shorter.

If we look 200 years in the future, a third of the acres would have become shaped by natural mortality and ingrowth and indirect activities. Around these areas would be stands in various stages of regrowth from irregular shelterwood cuts, again with recent cuts more likely to be found at greater distance from the RCW clusters.

The sand pine in the scrub community would be kept on a regular 50-year rotation. This would convert gradually the age class distribution of the scrub into the regular pattern of 20 percent of the acres in each of the five decade age classes in perpetuity (barring

natural disturbances). The over-50 component of the existing sand pine (i.e., old growth) would be eliminated eventually. Species that use the older stages, such as the lichens and bryophytes surveyed by Equihua (1989), would decline correspondingly. The maximum size of openings would be 120 acres to cap the visual impact of the clearcutting activity. This would structure gradually the sand pine forest into a larger number of smaller patches than created by natural fires (Myers and Ewel, 1990). Each species that uses the patch at one stage of the cycle or another would be faced with a large number of small islands of favorable habitat rather than fewer but larger islands. Their within-patch populations would be smaller. Inbreeding likely would increase since mating is commonly aided by proximity.

Whole-tree harvesting (bole plus branches) would be permitted. This practice depletes nutrients faster than where branches are required to remain on the site. Artificial seeding of sand pine harvest sites is encouraged in Alternative A, especially with genetically improved seed. Such seed is native to the sand pine scrub on the Ocala NF and has proven to be highly genetically diverse. Its use would not deplete genetic diversity or introduce nonnative strains of sand pine. However, use of artificial seeding would make the sand pine population genetically homogenous across the Big Scrub. By contrast, it would be common to find some genetic localization across 212,000 acres in an unmanaged tree population (Hamrick, 1994). This alternative also proposes a target stocking density of 600-700 sand pine stems per acre. This would tend to prevent areas of low-density sand pine. Since different sand pine densities create a range of microhabitats, the precluding of some densities reduces the range of microhabitats available to other community members.

The current direction would continue, allowing timber activity in bottomland hardwood and other wetland communities. The amount of such activity would be small, given the numerous constraints that must be met when working in these wetter habitats. Any such harvests would promote disturbance-adapted species in the openings and create patches of young trees in these communities whose age structures are otherwise being set by natural processes and indirect activities.

The current recreation direction would continue to give broad access to the national forests. All modes of transportation would be permitted, either on a travelway or simply through the understory. The only exceptions to this would be wilderness areas (where motorized and mechanical vehicles are not permitted) and special interest areas (where site-specific restrictions are likely to be in place). The Florida National Scenic Trail (FNST) would remain a hikers-only trail. The relative lack of restrictions in this alternative would likely lead to higher levels of recreational disturbances, caused especially when recreationists choose to drive/ride through wetland areas or create tracks through grass/herb understories. The expected shift toward more parklike conditions in the longleaf pine areas would make these communities increasingly vulnerable to such disturbances. Since the native species in the wetland and longleaf pine communities are not adapted to mechanical disturbance, such disturbances would open the door to nonnative weeds. The scrub, by contrast, is a high-disturbance community and would be less affected, especially as the dense, shrubby understory of all but the youngest stages inherently restricts transportation.

Several management areas would be removed from the timber base. These include wilderness areas, research natural areas, special interest areas, and recreation areas of various sorts. Vegetation would continue to be shaped by natural processes and indirect activities. Prescribed burning would occur where appropriate. Some direct vegetation manipulation would occur in the more developed recreation areas for access and scenery. Alternative A would assign fewer acres to these categories than most other alternatives.

In this alternative, there would be more acres available for cattle grazing than in the other alternatives. Allotments would be in mesic uplands and flatwoods dominated by longleaf or longleaf/slash pine mixtures with intermixed wetlands. These habitats provide poor forage. The density of cattle would be low, but they would receive feeding supplements. On range allotments, some summer prescribed burns would be replaced by winter prescribed burns to create a flush of forage during lean months. Winter prescribed burns promote a woodier understory than do summer prescribed burns. At the same time, cattle grazing tends to kill back the woody component; therefore, the net effect would be expected to be small. Trampling and erosion effects also would be small, because cattle density would be low and the low relief discourages erosion. If problems developed in sensitive areas, cattle would be fenced out. Range strips (i.e., plowed areas planted to noninvasive forage species) would be maintained, and new ones would not be created. In summary, the composition and relative abundance of species on range allotments would shift compared to equivalent nonrange areas, but the effect would be subtle.

Alternative B. Alternatives B through E propose the same RCW HMA boundaries, and they are smaller than those proposed in Alternative A. In particular, they do not include the Pinhook acquisition area on the Osceola NF or the western section of longleaf pine on the Ocala NF. Neither of these areas are known to have RCWs. The timber management of these areas would, in the long term, lead to the same forest structure inside and outside an RCW HMA. Areas outside RCW HMAs would become appropriate future RCW habitat. The difference is that the pathway toward that long-term condition would be unconstrained by practices intended to protect existing RCW clusters, such as delaying conversion of off-site slash pine to longleaf pine where RCWs are currently using the off-site slash pine.

Alternatives B through E follow the guidelines of the *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region (*RCW EIS), with some stated exceptions. For on-site species, the RCW EIS permits three timber management approaches—an irregular shelterwood method, a shelterwood method, and a group selection method. (Off-site slash pine or sand pine would be clearcut and replanted to longleaf pine, which then would be managed as the on-site species.) Alternative B adopts the predominant use of the group selection method throughout the national forests.

Under group selection, the treatment area for any given harvest event is likely to be several hundred to a thousand or more acres in size. This treatment looks like a thinning. Indeed, many of the trees are chosen simply to thin the stand. However, gaps from ¼ to 2 acres are deliberately created and managed to encourage regeneration of seedlings. Trees of all different size categories are removed in the harvest, with an eye to

creating/maintaining a reverse-J shaped size class distribution across the treatment area (i.e., many smaller trees tailing off into fewer larger trees). In Alternative B, the particular reverse-J curve chosen as the target size distribution has the feature that it maintains an average of 6 trees per acre in the 18-inch or larger category. This meets the RCW EIS guidelines for providing future cavity trees. These 6 trees per acre would not be located on every acre; they would be patchily distributed so that 6 trees per acre would be the average across the cutting unit. On national forest land in Florida, longleaf pine rarely reaches 18 inches in diameter before age 150 years. Therefore, these 6 trees per acre can be expected to be about 150 to 250 years old. Nearby trees of the next smallest size would grow continually into these larger sizes, replacing any that die of natural causes. Where more than 6 trees per acre occur, some of these large trees also would be harvested. The FORPLAN model shows that this particular reverse-J curve usually can provide the RCW EIS level of forage trees. In sites where it cannot, the target curve would be adjusted upward (or the appropriateness of the RCW EIS levels of foraging for that site would be reevaluated, since these are regional guides and may not be appropriate for some local conditions).

The long-term effect of this management would be to structure these forest areas into a very large number of small (less than 2 acres) even-aged patches. This approaches some interpretations of the patch structure of historic forests and, as such, would be expected to be nonfragmenting; that is, the native species would be adapted to moving between patches of this size in their search for patches in stages appropriate for them. The historic forests, however, had some larger patches of even-aged stands. Group selection alone would not reproduce those. For the next half century, these would be created by clearcuts that remove off-site slash and sand pine. Therefore, species that prefer larger patches would benefit in the foreseeable future. In the long-term future, management of on-site species also would include creation of larger openings by the shelterwood method that would still be an option, albeit a de-emphasized one in the near future.

Group selection requires entry into a treatment area more often as does the irregular shelterwood method depending on the cutting cycle. The impact of the more frequent disturbance on the understory is unknown and would require monitoring. The soil types where these forests occur on the national forests are not easily compacted, but recovery from mechanical crushing would need evaluation and mitigation such as careful design of skid trails.

The RCW EIS simultaneously allows more clearcutting of off-site pine during the next 20 years than does the interim guide; but it restricts more tightly where clearcutting can occur. In particular, clearcutting is not permitted within ¼ mile of an active RCW cluster, except on the Apalachicola RD. Also, throughout all RCW HMAs, clearcutting of any off-site stand is delayed for 30-50 years if it is already 75 years or older. The expected effect of these is that some off-site stands will never be converted by the clearcut/replant method. Under group selection, however, such areas could be included in harvest treatment areas. Off-site pine could be favored for selective removal and longleaf pine seedlings planted in the gaps, since natural sources of longleaf pine seed would be absent. This would lead to a gradual change to longleaf pine over several entries.

In sand pine scrub, the maximum clearcut size would be raised from 120 acres to 160 acres. Over time, this would increase the scale of the patch structure slightly and should result in slightly larger local population sizes for the species that use the patches in each of their stages. The rotation schedule would be modified from the current 50 years by adding the direction to maintain 5 percent of sand pine acres in the 55-to-80 age class at any given time. The location of these old-growth acres would move over time as the very old stands get regenerated and other stands are carried into old age. This would maintain the current state of the sand pine forest, which, despite the 50-year rotation schedule, has about 5 percent of old-growth acres remaining from very large fires earlier in the century. Soil fertility would be protected by requiring that small branches be left at the harvest site to decompose. Natural regeneration would be encouraged, accepting a wider range of stocking densities in sand pine stands. This would provide a wider range of microhabitats than does a direction to manage all stands for a given target density. Community members with slightly different preferences would all have patches most suited to them. Therefore, their relative abundances could be expected to vary from patch to patch.

Hardwood and cypress stands would be unsuitable for timber production, though salvage could occur. These forests would continue to grow older and to be shaped primarily by natural forces and indirect activities. Where these forest types line water bodies that attract recreation use, they would experience some disturbance from access roads, camping areas, etc. Hardwood could be sold and harvested in pine stands or in conjunction with ecosystem restoration such as longleaf pine/turkey oak sandhills.

Motorized vehicles would be restricted to open, numbered roads or designated trails. This is the most restrictive of the alternatives in this regard. As a result, this alternative would lead to the least recreational disturbance to understories, though channeling travel onto particular trails could increase trailside disturbance

This alternative embodies a strong emphasis on preserving natural communities in part by designating several new RNAs. These would include the Post Office Bay area (an area of longleaf pine-wiregrass mixed with savannahs) on the Apalachicola NF; Fanny Bay (a cypress swamp) on the Osceola NF; and Mud Lake (a lake with unique limnology), Mormon Branch (a bottomland forest with rare species), and Ancient Island (an area of scrub with several rare species) on the Ocala NF. These would join the two existing RNAs. RNAs have individual management plans with the overall goal of preserving the special features of the natural communities. The long-term expectation is that they would be preserved in an approximately natural state. This would likely include direct activities such as prescribed burning and reintroduction of extirpated species. Swamp communities in Impassable Bay and Pinhook on the Osceola NF are unusual for their remoteness rather than their community type. Their remoteness would be preserved by the minimum-access features of their proposed management area.

The number of acres in special interest areas and areas with recreational emphasis, including wilderness, would increase moderately. These are areas where natural communities would be left to respond to natural processes and indirect activities. Some necessary vegetation-shaping activities would occur to meet recreational needs (trail clearing, etc.).

Range allotments would remain the same as in Alternative A on the Apalachicola NF but would be smaller on the Osceola NF. Effects would be the same as in Alternative A but on fewer acres.

Alternative C. Outside RCW HMAs, suitable longleaf and slash pine acres would be managed using a combination of shelterwood and clearcut methods, with rotations of 80 years for longleaf pine and 60 years for slash pine. Treatment areas usually would be 50-80 acres in size. Inside RCW HMAs, the irregular shelterwood harvest method of the RCW EIS would be used to manage longleaf and slash pine. Because the proposed method outside RCW HMAs does not meet RCW EIS guidelines, acres outside RCW HMAs would not be expected to develop into future RCW habitat.

The proposed irregular shelterwood method inside RCW HMAs has the following features. When a longleaf pine stand is about 120 years old, or a slash pine stand about 100 years old, it would be eligible for a harvest cut, usually 15-25 acres in size (up to 40 acres on Apalachicola RD). This cut would leave a moderate number of trees on the site to act as seed sources. After a good crop of seedlings is established, a second harvest would remove some of the seed trees. Seed trees would be removed so that on every acre 6 trees in longleaf pine stands and usually 25-40 sq. ft. of basal area in slash pine stands would be retained indefinitely. The basal area left would vary by the management intensity level (MIL) for each forest. Fewer trees are left in longleaf pine stands, because longleaf pine seedlings tolerate less competition from adult trees than do slash pine seedlings. Longleaf pine is adapted to growing up in gaps, not under canopies. The leave trees would age and gradually die of natural causes. Mortality tables for the forests suggest that 6 longleaf pine trees per acre would all die within the next 30-40 years. The oldest longleaf pine trees on these acres would be about 180 years old. Under conditions found on the forests, the oldest trees would average about 18 inches in diameter and longleaf pine larger than that would be unusual. By comparison, where the group selection method would lead to an average of 6 longleaf pine trees per acre greater than 18 inches in diameter, this irregular shelterwood system would lead to almost no longleaf pine except large. In slash pine, however, the opposite would be observed. Since more slash pine trees would be left, it would take longer for all of them to die of natural causes. Meanwhile, slash pine grows to larger diameters more quickly. A few trees could be expected to survive long enough to reach 22 inches or larger—up to 1.7 times as many as under group selection.

Irregular shelterwood harvests as described above would not occur during the life of the Forest Plan (10-15 years), because the RCW EIS restricts the number of acres of even-aged regeneration. All of the allowed openings would be used for type conversion of off-site slash to longleaf pine. In about 20 years, the existing stands would be old enough to begin irregular shelterwood cuts of on-site species. During the next century, longleaf and slash pine areas of the RCW HMAs gradually would become structured into patches, usually 25-40 acres. In longleaf pine, the most recently treated 25 percent of the patches would have remnant overstory trees from the previous generation acting as a thin canopy over saplings (i.e., stand would be two-aged). The next youngest 25 percent would consist of even-aged stands of trees less than 10 inches in diameter. The oldest 50 percent would consist of even-aged stands averaging 10-15 inches in diameter. In slash

pine, the remnant overstory would never die out completely before the next generation had reached 10 inches in diameter. About 75 percent of the stands would be in a two-aged condition, compared to 25 percent for longleaf pine. The small patch sizes described from historic forests would be lacking. Therefore, less mobile species in the communities (e.g., amphibians and perennial plants) would perceive the forests as fragmented.

Outside RCW HMA boundaries, longleaf and slash pine suitable acres would maintain their current condition of even-aged stands up to 80 acres. The ages from zero to 60 (in slash pine) and zero to 80 (in longleaf pine) would be about equally represented, with stands older than that rare. On these acres, members of the natural communities that depend on older forests would be rare, and those that depend on a younger age forest would be more common. The patch structure would be large enough that most species would perceive the forests as fragmented.

As described under Alternative B, clearcutting would not be allowed within ¼ mile of RCW clusters and removal of older pine, whether off-site or on-site, is delayed elsewhere. Alternatives emphasizing the group selection method gradually could convert off-site stands in these areas by thinnings and regenerative gap-formation, Alternative C—with its emphasis on harvests that create larger openings—would have some difficulty doing the type conversions, and some may never occur.

This alternative proposes that an 1,800-acre area on the Apalachicola NF be used to grow wood fiber to be burned for electricity production. The small wetland inclusions in the area would be buffered. The remaining acres would grow a thick stand of mixed hardwood and pine. Stands would be fertilized for rapid growth and harvested on a 10-year rotation. Some members of the natural community on the site (upland pine) may be eliminated from the area.

Hardwood and cypress would be suitable for timber production. The efforts would be similar to Alternative A, except that more acres would be harvested in Alternative C.

In sand pine scrub, Alternative C would follow the same direction as Alternative B, with similar effects. Alternative C, however, would have more acres of sand pine scrub in timber production.

The access policy would be the same as in Alternative A, with similar effects.

The two wilderness study areas (WSAs) would be recommended for release to multiple-use management. If Congress accepts this recommendation, more acres could receive harvest treatments, with the effects described above.

The number of acres would increase slightly in special interest areas and recreational management areas, where the vegetation would develop with minimal direct activity.

The same range allotments would be assigned as in Alternative B, with similar effects.

Alternative D. In longleaf and slash pine suitable acres that are inside RCW HMAs, the alternative proposes to apply irregular shelterwood methods in some areas and group

selection methods in other areas. The effects described under Alternative B (group selection) and Alternative C (irregular shelterwood harvest) would apply to corresponding areas in Alternative D. Outside RCW HMAs, Alternative D proposes use of regular shelterwood and clearcut methods with a maximum opening size of 40 acres. Rotations would be 120 years for longleaf pine and 100 years for slash pine. The long-term effect would be to structure the forest into a set of even-aged stands, each about 40 acres. Stands from zero to 120 years (longleaf pine) or 100 years (slash pine) would be equally common, and stands older than that would be rare. This would lead to a moderate level of fragmentation and a moderately old forest. Species needing the oldest trees or the smallest patch sizes would be negatively effected. Others would find appropriate habitat. Outside RCW HMAs would be similar to inside RCW HMAs, except they would not have the older reserve trees.

In sand pine scrub, most of the suitable acres would be managed the same as in Alternative A, with the same effects. In the Ancient Island area, however, management would more closely mimic natural processes. In particular, maximum opening size would increase to 320 acres and natural regeneration (no artificial seeding or mechanical site preparation) would be emphasized. In the long run, the patch structure of this area would become larger, so populations using the patches could expand locally. Use of local seed sources for sand pine also will encourage local differentiation in the genetic structure of this species.

Several areas of scrub would be removed from timber management and instead managed specifically for Florida scrub-jay habitat. The existing sand pine overstory in these areas would be clearcut; then the areas would be burned frequently enough (every 5-20 years) to keep them in the young stage of the cycle in perpetuity. The expected effect on the community would be that species using the young stage (e.g., Florida scrub-jay and Florida bonamia) would become common and species using older stages (e.g., lichens and bryophytes) would be rare. Undoubtedly, repeated wildfires would have kept some areas in early stages for half a century or more. It would be appropriate to study the long-term effects of this management on subtle processes such as nutrient cycling.

This alternative shares Alternative B's direction in hardwood/cypress stand management, namely that these are unsuitable for timber production. Effects of this are described under Alternative B.

Motorized vehicles would be permitted only on open, numbered roads and designated trails, but the set of trails open to them would expand during hunting season. At that time, it would include any visible track through the forests. This seasonal disturbance of old travelways would delay, and, in some cases, prevent the process of their revegetation. The level of recreational disturbance to the vegetation would be greater than the more restrictive policy in Alternative B, but less than the less restrictive policy in Alternative C.

This alternative assigns the most acres to DFCs with a recreational focus. Three new wilderness areas would be proposed as well as several large areas of semiprimitive recreation (DFCs 4.1 and 4.2). There would be few roads and little evidence of direct human activity in these areas. These acres would be unsuitable for timber production.

The vegetation would become shaped primarily by natural processes and indirect activities. Activities that directly restore natural communities (thinning and type conversions) and that, for practical reasons, are commonly tied to timber production would occur less readily in these areas, or not at all.

The Savannah RNA would be expanded. This would add some longleaf pine-wiregrass communities to that RNA. Activities in the RNAs would be focused on preservation of the natural communities.

Range allotments would not be allowed; therefore, grazing would not be one of the forces opening up the understory. Prescribed burns would not be timed to include as many winter prescribed burns as in Alternative A. Summer prescribed burns would be more common in these areas. These are more effective at reducing the woody component of the understory. Old range strips would disappear as they become overgrown.

Alternative E. This alternative would have an intermediate number of suitable longleaf and slash pine acres (more than Alternatives B and D but fewer than Alternatives A and C). For these acres, management practices would be like those in Alternative B, except emphasis on the group selection method would not be quite as complete. The irregular shelterwood method, regular shelterwood method, or clearcut method would be chosen occasionally on a site-specific basis (especially on sites where regeneration would be difficult in the small gaps of group selection).

On the majority of acres managed under group selection, the effects would be very similar to those described in Alternative B. On the acres managed under the other systems, effects are described in Alternative C. Briefly summarized, the structure of longleaf pine forests during the next half century would be dominated by type conversion activities that created even-aged patches of longleaf pine 25-40 acres in size. Simultaneously, gradual thinning and small gap-formation of on-site stands would produce the smaller patch sizes, and yet some larger patches also would be created with a two-aged structure among on-site species. In 75 years, the type conversion patches would begin to disappear as those now older longleaf pine would start to receive group selection-type harvests. Ultimately, the forest structure would have a diverse path size structure with many small patches scattered among larger ones. This approaches some interpretations of the patch structure of historic forests and, as such, would be expected to be nonfragmenting; that is, the native species would be adapted to moving between patches of this size in their search for patches in stages appropriate for them.

Group selection requires entry into a treatment area more often as does the irregular shelterwood method depending on the cutting cycle. The impact of the more frequent disturbance on the understory is unknown and would require monitoring. The soil types where these forests occur on the national forests are not compacted easily, but recovery from mechanical crushing would need evaluation and mitigation such as careful design of skid trails.

The RCW EIS simultaneously allows more clearcutting of off-site pine during the next 20 years than the interim guide allows; but it restricts more tightly where clearcutting can occur. In particular, clearcutting is not permitted within ¼ mile of an active RCW cluster,

except on the Apalachicola RD. Also, throughout all RCW HMAs, clearcutting of any off-site stand is delayed for 30-50 years, if it is already 75 years or older. The expected effect is that some off-site stands will never be converted by the clearcut/replant method. Under group selection, however, such areas could be included in harvest treatment areas. Off-site pine could be favored for selective removal and longleaf pine seedlings planted in the gaps, since natural sources of longleaf pine seed would be absent. This would lead to a gradual change to longleaf pine over several entries.

In sand pine scrub, the maximum clearcut size would be raised from 120 acres to 160 acres in DFC 8.2 (sand pine, mixed regeneration, moderate openings) and 320 acres in DFC 8.1 (sand pine, natural regeneration, large openings). Over time, this would increase the scale of the patch structure slightly and should result in slightly larger local population sizes for the species that use the patches in each of their stages. The rotation schedule would be modified from the current 50 years by adding the direction to maintain 5 percent of sand pine acres in the 55-to-80 age class at any given time. The location of these old-growth acres would move over time as the very old stands get regenerated and other stands are carried into old age. This would maintain the current state of the sand pine forest, which, despite the 50-year rotation schedule, has about 5 percent of old-growth acres remaining from very large fires earlier in the century. Alternative E would protect soil fertility by requiring that small branches be left at the harvest site to decompose. This alternative also would encourage natural regeneration, accepting a wider range of stocking densities in sand pine stands. This would provide a wider range of microhabitats than does a direction to manage all stands for a given target density. Community members with slightly different preferences would all have patches most suited to them. Therefore, their relative abundances could be expected to vary from patch to patch.

Hardwood/cypress stands would be unsuitable for timber production, though salvage could occur. These forests would continue to grow older and to be shaped primarily by natural forces and indirect activities. Where these forest types line water bodies that attract recreation use, they would experience some disturbance from access roads, camping areas, etc. Hardwood could be sold and harvested in pine stands or in conjunction with ecosystem restoration such as longleaf pine/turkey oak sandhills.

Timber management in sand pine scrub would be as described in Alternatives B and C except in the Ancient Island area, where the more nature-mimicking practices described for that area in Alternative D would be followed. Alternative E also proposes a scrub-jay management area. The effects of these are described in Alternative D, except Alternative E proposes devoting fewer acres.

Alternative E proposes an access policy that would be intermediate in its effect on vegetation between the tightly restrictive policy of Alternative B and the rather unrestrictive policy of Alternative C. Cross-country travel would not be permitted. Parts of each forest would permit motorized and bicycle travel on any unmarked travelway while other parts would allow travel only on open, numbered roads and designated trails. Recreational erosion of understory and wetlands would be minimized, but repeated use of

some old travelways would prevent their natural obliteration, so some recreational disturbance to the vegetation would remain.

The number of acres removed from the timber base would increase moderately and would be placed, instead, into management areas with recreational or other emphases. Clear Lake WSA on the Apalachicola NF would recommended for wilderness status, but Natural Area WSA on the Osceola NF would be released into general forest from its current wilderness study area status. The number of special interest areas would increase. Vegetation in these areas would receive little direct activity, except as necessary to mitigate recreational erosion. Where appropriate, there would be prescribed burning. The remote central swamp in the Pinhook area of the Osceola NF would remain limited in access.

Cattle grazing would be similar to Alternative B, except if an allotment was vacant for 5 consecutive years, it would be discontinued. This would result in a gradual phaseout of the range program. The effects on vegetation from grazing within range allotments are described in Alternative A. The effects within the allotments would be the same in Alternative A. The differences would be that there are fewer acres of allotments and there would be gradual phaseout of the program if demand continues to decline.

Wildlife and Fish

Affected Environment

The national forest lands in Florida provide important habitat for a wide diversity of wildlife and fish species. The national forest lands are home permanently or seasonally to 475 vertebrate species, comprised of the following classes:

Class	Number of Species
Amphibians	47
Birds	219
Fish	123
Mammals	50
Reptiles	74

The national forests in Florida have a wide variety of aquatic habitats, including 854 miles of perennial streams which are drained by 3 major river systems, 6 first- or second-magnitude springs with corresponding spring runs, more than 600 natural lakes, approximately 50 excavated ponds, and 1 impoundment. Both biological diversity and productivity varies greatly in these waters. Alkaline waters of the rivers and spring runs are more productive and support a more diverse species assemblage than the acid waters of the natural lakes and excavated ponds.

One hundred twenty-three species of fish, of which 38 are anadromous or marine, have been collected from the waters within or adjacent to these forests. Healthy populations of aquatic invertebrates, including gastropods, benthic arthropod, and freshwater mussels are found throughout the forests, but with the most diverse and abundant populations found in the more alkaline lotic environments.

The forests provide habitat for 25 federally threatened or endangered vertebrate species, 1 proposed threatened species, and 1 candidate species (Appendix E, ``Threatened, Endangered, and Sensitive Species"). In addition, 110 animal species—including amphibians, birds, crustaceans, insects, fish, mammals, mollusks, and reptiles—have been identified by the Forest Service as sensitive species (*see* Appendix E). Eighty-five plant species also have been identified as sensitive species (*also see* Appendix E). Sensitive species are species whose population viability is of concern because of known, or predicted, downward trends in population size or habitat capability.

The Apalachicola, Ocala, and Osceola NFs are part of the Florida Game and Fresh Water Fish Commission's Type I Wildlife Management Area System. The forests are open to public hunting, but hunters are required to have a wildlife management area stamp. The forests are among the largest areas in the State of Florida open to public hunting. The forests make up just more than 25 percent of the total land area of the Type I Wildlife Management Area System. The forests averaged more than 250,000 user-days of hunting per year from 1988 through 1993. The Ocala NF was consistently the highest Type I management area in hunter user-days, with the Apalachicola and Osceola NFs in the top five. The major game species hunted are deer, dove, quail, squirrel, turkey, and wood duck. Deer hunting with dogs is allowed on parts of the Apalachicola, Ocala, and Osceola NFs. There is a spring turkey season on all three of these forests. Foxes may be run for sport during designated seasons. Black bears were hunted on the Apalachicola and Osceola NFs through 1993, then the Florida Game and Fresh Water Fish Commission voted to stop bear hunting. Wildlife and fish (game and nongame) species contribute to the enhancement of the recreation experience for many forest visitors. Bird-watchers from around the world visit the forests to observe RCWs or scrub-jays.

The forests are important to 125 Neotropical migrants as temporary stopover sites during migration. The forests provide these natural resting areas in an otherwise altered landscape of Florida. The Apalachicola NF may be the most important because it is closest to the Gulf of Mexico. It represents one of the first major pieces of undeveloped habitat that the birds reach on the mainland. These bird species use a wide variety of habitats—including sandhills, scrub, flatwoods, lakeshores, marshes, streamsides, hardwood hammocks, bottomland hardwoods, and other riparian-related habitats.

Many of the issues faced in the development of the alternatives involved biodiversity, either directly or indirectly. The activities that occur and their level of occurrence all have a bearing on the biodiversity of the forests. The National Forest Management Act of 1976 requires each national forest to manage for and maintain a diversity of plant and animal communities and to protect critical habitat for appropriate threatened and endangered species. By managing for the natural diversity of forest composition, structure, and function at appropriate scales, it is assumed that the needs of the greatest number of species would be addressed. Conservation of all species collectively can best be attained by focusing on ecosystems, landscapes, and communities rather than on individual species.

Several habitat associations have been identified on the national forests in Florida in order to discuss the effects of alternatives. Table 3.11 shows the current habitat

association conditions on the national forests in Florida. A list of threatened, endangered, and sensitive species found in these habitat associations is found in Appendix E.

Table 3.11

Current Habitat Association Conditions on National Forests in Florida

Habitat Association	Apalachicola NF	Ocala NF	Osceola NF
Sandhill and Scrubby Flatwoods			
0-10 age class	4,006	6,780	0
11-30 age class	7,826	8,626	0
31-80 age class	14,999	16,259	0
81+ age class	3,234	14,643	0
Mesic Flatwoods and Wet Flatwoods			
0-10 age class	29,440	6,947	13,162
11-30 age class	71,223	7,144	24,951
31-80 age class	168,177	23,415	80,003
81+ age class	15,516	641	2,369
Xeric Hammock, Upland Hardwood Forest, and Slope Forest			
0-20 age class	461	2,091	0
21-60 age class	2,592	4,745	94
61-100 age class	3,800	4,127	117
101+ age class	37	101	0
Scrub			
0-10 age class	0	46,463	0
11-30 age class	0	84,822	0
31-50 age class	0	28,960	0
51+ age class	0	45,898	0
Bottomland Forest, Floodplain Swamp, Hydric Hammock, Baygall, Basin Swamp, Dome Swamp, and Strand Swamp			
0-20 age class	1,145	326	427
21-60 age class	7,531	2,596	7,349
61-100 age class	85,940	27,895	37,926
101+ age class	4,519	607	0
Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs	6,043	101	980
Titi/Brush	133,573	0	10,005
Aquatic (Lakes, Rivers, Streams, Ponds)	4,936	18,263	2,129

The sandhills and scrubby flatwoods association provides habitat for a number of unique species—including Florida mouse, gopher frog, gopher tortoise, indigo snake, red-cockaded woodpecker, red-headed woodpecker, striped newt, and wild turkey. Species found in mesic flatwoods and wet flatwoods associations include flatwoods salamander, Florida black bear, common king snake, pine warbler, red-cockaded woodpecker, and white-tailed deer. Species utilizing the xeric hammock, upland hardwood forest, and slope forest habitat association include eastern diamondback rattlesnake, rufous-sided towhee, and Sherman's fox squirrel. The sand pine scrub is home to a number of unique species found almost exclusively in this habitat association—including Florida scrub-jay, Florida scrub lizard, and sand skink. A wide variety of species use the bottomland forest, floodplain swamp, hydric hammock, baygall, basin swamp, strand swamp, and dome swamp habitat association, among them are cottonmouth, Florida black bear, white-tailed deer, wild turkey, and yellow-throated warbler. Bogs, seepage slopes, depression marshes, and wet prairies/savannahs provide optimal habitat for some grassland bird species, like sandhill cranes and some of the sparrows. The national forests in Florida contain or border on a wide variety of aquatic communities such as temporary and permanent ponds, lakes, freshwater springs, streams, and rivers.

Environmental Consequences

Effects of Forest Plan implementation on wildlife and fish are related to management strategies that would alter habitat conditions or cause physical injury or mortality to individual animals that potentially could affect population trends. Effects on wildlife are closely related to vegetation management. Effects of the alternatives on vegetation disclosed earlier directly and indirectly apply to wildlife habitat.

In all alternatives, site-specific biological evaluations are required when projects are proposed. This ensures that proposed, endangered, threatened, and sensitive (PETS) species are protected. Recovery plans and Forest Service handbook chapters and habitat management guidelines have been prepared for several of these species and all alternatives follow these guides with a few exceptions. Several RCW guidelines (RCW EIS) have been modified. Foraging guidelines have been reduced on the Apalachicola HMA in Alternatives C and E. On all HMAs, the basal area (BA) of pine timber may be reduced to 60 BA during thinning operations in Alternatives C and E. A test of irregular shelterwood management is proposed in Alternative E. The age class distribution for 0-10 age class for restoration projects would be applied during the whole planning period and not figured on a yearly basis in Alternative E. On all areas the lower limits of stocking densities for regeneration of pines have been reduced, and on the Ocala NF the opening sizes in sand pine have been increased (*Final Environmental Impact Statement for Standard and Guidelines for the Southern Regional Guide*) for Alternatives B, C, D, and E.

The Forest Service has a concurrence letter from the U.S. Fish and Wildlife Service that states *Interim Standards and Guidelines for Protection and Management of RCW Habitat Within ¾ Mile of Colony Sites* may affect (adversely affect) the RCW. Implementation of this portion of Alternative A (Interim Guidelines) could not occur.

Alternative A would not be a viable alternative for RCW management, but it was fully developed for comparison purposes and to aid in disclosure of effects. In all other alternatives, RCWs would be managed as directed by the RCW EIS, except as previously noted. All alternatives would manage the populations on the Apalachicola and Osceola NFs as recovery populations. RCW HMAs vary slightly by alternative and are discussed below.

Major themes shared by all alternatives, except Alternative A, include implementation of regional RCW guidelines, increased use of prescribed burning, thinning of young pine stands, a reduction in soil disturbance from site preparation and fireline construction, and restoration of longleaf pine from areas that now contain off-site slash or sand pine.

Many wildlife species on the forests are adapted to fire-maintained communities, such as longleaf pine-wiregrass. Prescribed burning is a very important management practice for maintaining and improving wildlife habitat. All alternatives include an increase in the prescribed burning program with more growing-season burning designed to mimic the natural fire regime and produce conditions similar to those from which the native species evolved. Fire may cause the direct loss of some individuals; however, the net effect on most native species would be positive. Growing-season burns would reduce midstory vegetation and increase herbaceous vegetation. Reductions in the midstory would favor the RCW but could reduce habitat for shrub-nesting birds, such as gray catbird and various vireos and warblers. The forests would be more open than they are now. The larger hardwood would not be affected immediately by prescribed burning, except under extreme conditions. This would keep hard mast production near current levels. However, the hardwood overstory component would decrease over time as mortality eventually takes its toll on the larger trees. Regeneration of these hardwood trees would be suppressed by fire, which eventually would cause reductions in hard mast from the overstory for deer, squirrels, and turkeys. However, there may be an increase in hard and soft mast from understory mast-producing species, runner oak and vacciniums, that respond to the growing-season fire (Ault and Stafford, 1993). Growing-season burns also may open areas around wetland habitat and increase the foraging and breeding potential of these areas for wading birds and amphibians. Size and spatial arrangement of burns would result in different effects. Very large and complete burns could reduce foraging and nesting potential for species that have small home ranges and limited dispersal distances. Small or patchy burns would favor species preferring a mosaic of habitat conditions.

Crown closure and the absence of prescribe burning in young pine plantations create conditions that suppress the natural understory vegetation. The combined effect of thinning and burning in these young pine stands helps to prevent crown closure and would allow for faster growth of the remaining pines and increase light levels to the forest floor. The increased light to the forest floor would favor the native understory vegetation. This in turn would benefit ground-nesting and -foraging birds—such as Bachman's sparrow—and fossorial reptiles and amphibians. This also would improve the future potential of these stands for RCW-foraging habitat.

All alternatives would permit conversion of off-site species to the naturally-occurring species, such as off-site slash pine and sand pine to longleaf pine. In most cases, this would require clearcutting, site preparation, and planting the desired species, almost always longleaf pine. Immediate effects of these restoration efforts would create conditions favorable to species that prefer early successional stage habitat. The use and suitability of these areas largely would depend on the condition of the ground cover vegetation after all restoration activities have taken place. If the ground cover remains relatively intact many more species would find these areas favorable. Species potentially utilizing these areas in the near future after initial treatments include bobwhite quail, gopher tortoise, rabbit, and wild turkey. The long-term effects of this restoration would benefit species that prefer mature longleaf pine forests—such as fox squirrel, pine warbler, and RCW.

All alternatives emphasize growing older, and usually larger, trees. In alternatives with even-aged management rotations range between 55 and 120 years, depending on the tree species and location within the forests. In the uneven-aged system, a modified group selection method would be used. Stands would be managed so that in the future trees of all size classes would be represented within each stand. To achieve this distribution of size classes would take many years and multiple harvests within each stand. As the forests age under all alternatives, there would be trees with large diameters which would benefit cavity nesters that require trees of some minimum size class for cavity construction. Large diameter snags would become more evident in the future, which also would benefit cavity-nesting species (such as hairy, pileated, and red-headed woodpeckers), secondary cavity nesters (such as brown-headed nuthatches), and species that feed on the insects that occur in snags and/or down woody material (such as pileated woodpecker and Florida black bear). FORPLAN habitat indices for fox squirrel, gray squirrel, and pileated woodpeckers show an increase for all alternatives during the next 50 years (*see* Figure 3.10). This reflects the trend toward an older forest in all alternatives, especially hardwood forest types.

Deadwood, down wood, and snags are important parts of any forested ecosystem, as every tree is a potential snag. Snags provide nesting, roosting, and feeding sites for nearly every major group of species, amphibians, birds, fungi, invertebrates, lichens, mammals, mosses, and reptiles. Even fish will utilize deadwood, submerged hollow logs are a favored nest site of catfish. Snags specifically benefit woodpeckers and species that are secondary cavity users. Several species of bats may use the space under loose bark and hollows within snags and large trees. The size of a snag is of great importance. Larger snags can be substituted for smaller snags; however, the reverse is not true (USDA, 1979). A continual supply of snags is created on the forests by frequent lightning strikes. Florida has one of the highest incidences of ``thunderstorm days'' in the United States (Myers and Ewel, 1990). Some level of snag retention will be provided in all alternatives. Some snags are lost during prescribed fires. However, snags can be created during prescribed burning as dense stands are thinned by fire, but these snags are likely to be of smaller size and not as beneficial as larger snags.

Some form of site preparation usually will be required in regeneration areas. Site preparation may include one or more of the following: prescribed fire, chemical, hand

tool, and mechanical methods. Site preparation would vary depending on the amount and type of vegetation on the site. Areas with predominantly a herbaceous ground cover may only require a site-prep burn. If the site contains large amounts of shrubby vegetation (such as gallberry and palmetto) then a mechanical treatment (such as chopping) may be required. Areas with large amounts of heavy woody vegetation (such as turkey oak) may require chemical, hand tool and/or mechanical methods. A site-specific evaluation would determine the appropriate site-preparation method.

All forms of site preparation have the potential to disturb wildlife species. This disturbance would be temporary, only occurring during the treatment phase. Negative effects would be greatest to ground-nesting species (such as ground-nesting birds, amphibians, and reptiles). Site preparation by prescribed fire would have the least disturbance on the majority of species as most are adapted to frequent natural fires. Ground cover condition after site preparation is a major factor that determines the suitability of an area for wildlife species. Generally site-preparation treatments would create conditions favoring species preferring early successional habitat, bobwhite quail and gopher tortoise, as long as sufficient ground cover vegetation remains intact.

Site preparation and fireline construction have the potential to create soil disturbance, which could alter existing ground cover, impacting ground-nesting and -foraging bird species and fossorial reptiles and amphibians. Site preparation and fireline construction also can change overland water-flow patterns so shallow ponds are no longer suitable as breeding sites for amphibians. Fish and other aquatic organisms could be affected by mechanical site preparation if erosion caused by soil disturbance results in stream siltation. Mitigation measures prohibiting or restricting the use of mechanical site preparation within streamside and riparian areas would result in minimal impacts to fish and other aquatic species.

All alternatives meet or exceed *Florida's 1993 Silviculture Best Management Practices* (BMPs) and the *Record of Decision, Final Environmental Impact Statement Vegetation Management in the Coastal Plain/Piedmont* for activities occurring on the forests. Except for intense fires that destroy much of the ground cover and increase sedimentation in small streams, prescribed burns should have little impact on fish populations as long as mitigation measures in streamside management zones are implemented.

Special-use permits for the collection of various products would be allowed under all alternatives. Special uses of particular concern in regards to wildlife are bait (worm) harvesting, firewood collection, and palmetto berry collection.

Bait harvesting permits currently are issued only on the Apalachicola NF. The effect of harvesting earthworms for fish bait on the forest ecosystem is poorly understood at this time. Concerns about this harvest include effects on abundance, diversity, and population structure of earthworms, and subsequent effects on soil productivity. The average number of bait permits sold annually during the last 5 years was 425. A cooperative study with the University of Georgia is in place to study the effects of worm harvesting.

Firewood collection would be restricted to designated areas and would be used as a tool to achieve management goals, such as reducing competition or midstory in a pine stand. Firewood collection can have effects similar to thinning, in that the growth of the residual stand is improved and understory vegetation would receive more sunlight. However, since hardwood trees are removed there may be a reduction in the hard mast production of the area, depending on the response of the residual trees and the size and species of trees removed. A reduction in hard mast may negatively affect species that forage on hard mast—such as deer, Florida black bear, fox squirrel, gray squirrel, and wild turkeys. The overall negative effect on these species from firewood collection would be small, since none are entirely dependent on hard mast, the harvest areas are of limited size, and not all hardwood would be removed from these areas. Additionally, because of increased sunlight to the forest floor there could be an increase in mast production from understory vegetation, such as runner oaks and vacciniums.

Palmetto berry collection would be permitted in all alternatives, except on the Apalachicola NF. Thirty-three permits have been issued during the last 4 years. These permits are each for one ton of berries. The concern with the removal of the palmettos berries is that during low production years a significant food source for wildlife, especially Florida black bear, could be reduced. Palmetto berry harvesters look for areas with very high numbers of berries. Since the vegetation is usually thick, many berries are hidden from view and are left behind (Johnson, 1997). Therefore, the harvest of palmetto berries, if properly controlled, would not have a great impact on species that use the berries.

On the Ocala NF, the sand pine scrub ecosystem historically was regenerated by catastrophic stand-replacing fires. Many of the species endemic to the scrub, including several federally listed species, are dependent on the early successional habitat that was created by these large fires. Because of the extensive interface with private land throughout the forest and the large number of acres that need treated (> 4,000 acres per year) to maintain early successional scrub habitat, stand-replacing fires are too dangerous to be used for habitat management. Clearcutting of sand pine scrub appears to mimic these stand-replacing fires and would be done in all alternatives. Scrub-jays, sand skinks, and other species associated with early successional scrub habitat have in the past responded favorably to the habitat created by clearcutting sand pine scrub. Forage production in the form of mast (hard and soft) is highest in the first 3 years after timber harvest in sand pine scrub (Harlow et al., 1980). These areas would provide abundant forage for numerous species, such as Florida black bear and white-tailed deer. Alternatives B, C, D, and E propose clearcuts larger than the current regional standard of 120 acres for sand pine. DFC 8.1 has sand pine clearcuts up to 320 acres, and DFC 8.2 has sand pine clearcuts up to 160 acres. The larger size of these clearcuts is intended to shift the treatment size toward a size that more closely replicates the catastrophic stand-replacing fire that historically occurred in these communities. These larger cuts would benefit scrub-jays by allowing numerous family groups to inhabit a single, newly created opening. This would allow interaction between more scrub-jay groups than is possible with the currently allowed opening size.

All alternatives would have some level of road reconstruction for various resource activities especially timber harvesting activities. Road reconstruction involves work necessary to return a road to a service standard that is adequate for the activity planned. This could be as simple as spots of fill and grading or much more involved, such as pulling ditches and resurfacing the road. Road reconstruction could have various effects on wildlife. These effects include disturbance during the reconstruction activities, possible increased sedimentation, and increased use of the road after the proposed activities because of the better condition of the road. Maintenance and reconstruction activities temporarily could disturb or displace species along and near the roadway. This disturbance would have its greatest impact during breeding and/or nesting seasons of the affected species. Increased sedimentation from road activities would be minimized by use of Forest Service handbook guidelines during maintenance and reconstruction activities. Species potentially impacted from increased sedimentation would be aquatic species inhabiting water bodies near road projects. These could include any of the numerous amphibians species, aquatic invertebrates, and numerous fish species occurring on the forests. Disturbance from increased traffic levels after maintenance or reconstruction activities could increase because the improved road conditions could allow for a wider range of vehicles to access these roads. FORPLAN model estimates based on full implementation of the alternatives ranks them in the following order: Alternative E (406 miles), Alternative C (367 miles), Alternative A (324 miles), Alternative B (305 miles), and Alternative D (226 miles). New road construction in all alternatives is expected to be very low, since the road system needed for timber management is already in place. Any new road construction most likely would be related to recreation or administrative facilities.

None of the actions proposed in the alternatives would generate any substantial change in vehicle use of State and county roads traversing the forests. However, the traffic level on all State and county roads throughout the forests can be expected to increase because of the continuing growth in the State of Florida. This increased traffic level could lead to more roadkills of all wildlife species that currently are impacted by these State and county roads. Florida Game and Fresh Water Fish Commission records indicate paved State and county roads are the only sites of Florida black bear roadkills within the forests. Bear roadkill problem areas have not been associated with Forest Service system roads. Roadkills of bears on paved State and county roads that traverse the Ocala NF are the most significant of the national forests in Florida, especially State Highways 40 and 19.

All alternatives would emphasize acquisition of land to connect large areas of public ownership. The acquisition lands within the Pinhook purchase unit would benefit many wildlife species, especially wide-ranging species such as the Florida black bear. Such an acquisition also would provide a future connection of RCW populations that occur on the Osceola NF and the Okefenokee Wildlife Refuge. This connection also could be beneficial for any future attempt to reintroduce Florida panthers to the area.

The alternatives would have no impact on land available for hunting. Administratively closed areas, such as recreation areas and Juniper Prairie Wilderness, would not be available for hunting. The Florida Game and Fresh Water Fish Commission sets the

open-season dates and bag limits for hunting on the national forests. Any impact on hunting from the alternatives would be the result of the alternative access policies.

The aquatic communities are treated similarly throughout all alternatives. Water bodies are categorized for fishery management as: developed, fishery enhanced, native, or primitive. These categories provide a range of fishery experience while maintaining the aquatic communities.

Developed lakes are permanent water bodies that support a variety of developed recreation activities, including sportfishing.

Fishery-enhanced lakes include all permanent human-made water bodies that now exist or will be established on the forests. These ponds may be managed specifically for sportfishing utilizing a comprehensive array of fishery management activities.

Native lakes and ponds include all the permanent water bodies that are not listed in the other categories. These water bodies support a variety of recreational activities, including moderate sportfishing. The management goal for these is to maintain ecologically healthy conditions for the entire aquatic community. Under normal circumstances, little or no active management would be expected. However, if the aquatic community becomes unbalanced as a result of some disturbance, the Forest Service may take action to restore balance.

Primitive lakes are permanent water bodies that are located in designated areas or that have unique conditions that make them special. They include all sinkholes open to the Floridan aquifer and all lakes and ponds inside wilderness areas, wilderness study areas, research natural areas, and remote wetland areas. A few additional lakes and ponds—Bonnett Pond (Apalachicola NF); Church Pond (Osceola NF); and Gobbler Lake, Lawbreaker Lake, and Mud Lake (Ocala NF)—are added to this category, because they are either especially undisturbed or have highly unusual features. The management goal for these water bodies is to preserve them in an unaltered state.

Mitigating measures used in applying BMPs in all alternatives would limit the negative impacts to water bodies. Some sedimentation and pollutants would be introduced into water bodies with motorized watercraft access.

Alternatives A, B, C, and E would permit cattle grazing. Alternative D does not permit cattle grazing. Based on current demand the level of grazing is not be expected to increase during the next 10 years. This low level of grazing (approximately 320 head on 30,570 to 44,820 acres for a density of 95 to 140 acres per head) would have a minimal direct or indirect affect on wildlife. If the demand for grazing rose to the maximum level of capacity for the forests, the following levels could be expected. Alternative A would permit approximately 3,472 head on 192,718 acres for a density of 55 acres per head. Alternatives B, C, and E would permit approximately 1,321 head on 87,510 acres for a density of 66 acres per head. Alternative E would discontinue a range allotment if it was vacant for 5 consecutive years. Even at maximum capacity the overall effects would be minimal. At all levels of capacity there are several specific potential negative effects: soil compaction and disturbance in areas around watering holes and supplemental feeders, the

potential introduction of exotic species, and the impacts of fences. The effects of soil compaction and disturbance can be minimized by fencing sensitive areas to keep out cattle. Additionally, carefully planned placement of supplemental feeding areas can lessen impacts from cattle. The potential for introduction of exotic plant species is reduced by requiring the permittee to use practices that lessen the risk of introducing exotic plant species. Examples include: use of hay from a source free of exotic weeds and their seeds and penning cattle for several days to allow for gut evacuation before they are released on the forests. Fences that contain cattle have the potential to affect some wildlife species. This has been the case in some mountainous and Western areas. However, this is not the case in Florida. There are no wildlife species that find the type fences used for cattle range on the forests as a major deterrent. Most species are small enough to go under or through the fence openings. The large mammals on the forests, deer and bear, also are able to successfully navigate these fences. Deer can easily jump over or go through the fence. During a Florida Game Commission study with radio-collared bears, bears were found also to be able to cross these cattle fences.

In compliance with planning regulations at 36 CFR 219.19 (viability) and 36 CFR 219.26 (diversity), a species viability analysis was conducted to evaluate the likelihood of persistence of selected species in the planning area. A team of wildlife biologists, botanists, and a fisheries biologist was convened and evaluated species viability in relation to the selected alternative (Alternative E) and the management direction in the Revised Forest Plan. The species chosen to evaluate were selected from those which are threatened, endangered, proposed for listing, sensitive, locally rare, high-priority land birds or species of special concern. The evaluation of each species considered habitat associations, population status, habitat status, relationship of population to habitat, risk factors, provisions in the Forest Plan, viability finding, and references. A summary of this analysis is found in Appendix E. Provisions in the Revised Forest Plan (Alternative E) provide for habitat to support viable populations of existing native and desired nonnative vertebrate species in the planning area (*see* Appendix E).

Table 3.12 shows the habitat association conditions at the end of the first 10-year period for each alternative. A discussion of habitat association conditions by alternative follows.

Table 3.12

Habitat Association Conditions at the End of the First 10-Year Period

Alternative A			
Habitat Association	**Apalachicola NF**	**Osceola NF**	**Ocala NF**
Sandhill and Scrubby Flatwoods			
0-10 age class	1,280	0	580
11-30 age class	11,256	0	10,273
31-80 age class	10,470	0	9,970
81+ age class	7,059	0	25,485
Mesic Flatwoods and Wet Flatwoods			
0-10 age class	1,690	0	407
11-30 age class	60,413	27,598	10,537
31-80 age class	158,623	77,541	22,646
81+ age class	63,630	15,346	4,557

Xeric Hammock, Upland Hardwood Forest, and Slope Forest			
0-20 age class	400	0	834
21-60 age class	1,717	53	5,449
61-100 age class	4,231	158	4,251
101+ age class	542	0	530
Scrub			
0-10 age class	0	0	49,820
11-30 age class	0	0	91,919
31-50 age class	0	0	53,435
51+ age class	0	0	10,969
Bottomland Forest; Floodplain Swamp; Hydric Hammock; Baygall; Basin, Dome, and Strand Swamps			
0-20 age class	2,145	960	826
21-60 age class	1,995	1,280	1,642
61-100 age class	87,541	43,255	27,386
101+ age class	7,454	207	1,580
Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs	6,043	980	101
Titi/Brush	133,573	10,005	0
Aquatic (Lakes, Rivers, Streams, Ponds)	4,936	2,129	18,263

Table 3.12 (cont.)

Alternative B			
Habitat Association	**Apalachicola NF**	**Osceola NF**	**Ocala NF**
Sandhill and Scrubby Flatwoods			
0-10 age class	7,916	0	1,766
11-30 age class	7,938	0	9,681
31-80 age class	7,152	0	9,376
81+ age class	7,059	0	25,485
Mesic Flatwoods and Wet Flatwoods			
0-10 age class	0	404	0
11-30 age class	60,413	27,598	10,537
31-80 age class	160,313	77,137	23,053
81+ age class	63,630	15,346	4,557
Xeric Hammock, Upland Hardwood Forest, and Slope Forest			
0-20 age class	400	0	834
21-60 age class	1,717	53	5,449
61-100 age class	4,231	158	4,251
101+ age class	542	0	530
Scrub			
0-10 age class	0	0	32,341
11-30 age class	0	0	91,919
31-50 age class	0	0	53,435
51+ age class	0	0	28,448
Bottomland Forest; Floodplain Swamp; Hydric Hammock; Baygall; Basin, Dome, and Strand Swamps			
0-20 age class	1,145	380	326
21-60 age class	1,995	1,280	1,642
61-100 age class	88,541	43,835	27,886
101+ age class	7,454	207	1,580
Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs	6,043	980	101
Titi/Brush	133,573	10,005	0
Aquatic (Lakes, Rivers, Streams, Ponds)	4,936	2,129	18,263
Alternative C			
Habitat Association	**Apalachicola NF**	**Osceola NF**	**Ocala NF**
Sandhill and Scrubby Flatwoods			

0-10 age class	10,788	0	486
11-30 age class	6,502	0	10,320
31-80 age class	5,716	0	10,017
81+ age class	7,059	0	25,485
Mesic Flatwoods and Wet Flatwoods			
0-10 age class	1,500	1,839	3,766
11-30 age class	60,413	27,598	10,537
31-80 age class	158,813	75,702	19,287
81+ age class	63,630	15,346	4,557
Xeric Hammock, Upland Hardwood Forest, and Slope Forest			
0-20 age class	400	0	834
21-60 age class	1,717	53	5,449
61-100 age class	4,231	158	4,251
101+ age class	542	0	530

Table 3.12 (cont.)

Alternative C (cont.)			
Habitat Association	**Apalachicola NF**	**Osceola NF**	**Ocala NF**
Scrub			
0-10 age class	0	0	40,895
11-30 age class	0	0	91,919
31-50 age class	0	0	53,435
51+ age class	0	0	19,894
Bottomland Forest; Floodplain Swamp; Hydric Hammock; Baygall; Basin, Dome, and Strand Swamps			
0-20 age class	9,145	4,990	3,137
21-60 age class	1,995	1,280	1,642
61-100 age class	80,541	39,225	25,075
101+ age class	7,454	207	1,580
Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs	6,043	980	101
Titi/Brush	133,573	10,005	0
Aquatic (Lakes, Rivers, Streams, Ponds)	4,936	2,129	18,263

Alternative D			
Habitat Association	**Apalachicola NF**	**Osceola NF**	**Ocala NF**
Sandhill and Scrubby Flatwoods			
0-10 age class	7,872	0	1,386
11-30 age class	7,960	0	9,871
31-80 age class	7,174	0	9,566
81+ age class	7,059	0	25,485
Mesic Flatwoods and Wet Flatwoods			
0-10 age class	0	1,039	1,384
11-30 age class	60,413	27,598	10,537
31-80 age class	160,313	76,502	21,669
81+ age class	63,630	15,346	4,557
Xeric Hammock, Upland Hardwood Forest, and Slope Forest			
0-20 age class	400	0	834
21-60 age class	1,717	53	5,449
61-100 age class	4,231	158	4,251
101+ age class	542	0	530
Scrub			
0-10 age class	0	0	30,861
11-30 age class	0	0	91,919
31-50 age class	0	0	53,435
51+ age class	0	0	29,928
Bottomland Forest; Floodplain Swamp; Hydric Hammock; Baygall; Basin, Strand, and Dome Swamps			
0-20 age class	1,145	380	326
21-60 age class	1,995	1,280	1,642
61-100 age class	88,541	43,835	27,886
101+ age class	7,454	207	1,580
Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs	6,043	980	101
Titi/Brush	133,573	10,005	0
Aquatic (Lakes, Rivers, Streams, Ponds)	4,936	2,129	18,263

Table 3.12 (cont.)

Alternative E			
Habitat Association	**Apalachicola NF**	**Osceola NF**	**Ocala NF**
Sandhill and Scrubby Flatwoods			

0-10 age class	8,152	0	2,947
11-30 age class	7,820	0	9,090
31-80 age class	7,034	0	8,786
81+ age class	7,059	0	25,485
Mesic Flatwoods and Wet Flatwoods			
0-10 age class	1,500	1,000	78
11-30 age class	60,413	27,598	10,537
31-80 age class	158,813	76,541	22,975
81+ age class	63,630	15,346	4,557
Xeric Hammock, Upland Hardwood Forest, and Slope Forest			
0-20 age class	400	0	834
21-60 age class	1,717	53	5,449
61-100 age class	4,231	158	4,251
101+ age class	542	0	530
Scrub			
0-10 age class	0	0	40,000
11-30 age class	0	0	91,919
31-50 age class	0	0	53,435
51+ age class	0	0	20,789
Bottomland Forest; Floodplain Swamp; Hydric Hammock; Baygall; Basin, Strand, and Dome Swamps			
0-20 age class	1,145	380	326
21-60 age class	1,995	1,280	1,642
61-100 age class	88,541	43,835	27,886
101+ age class	7,454	207	1,580
Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs	6,043	980	101
Titi/Brush	133,573	10,005	0
Aquatic (Lakes, Rivers, Streams, Ponds)	4,936	2,129	18,263

Alternative A

Timber management in longleaf/slash pine would be even-aged. Longleaf/slash pine would be treated with clearcuts, seed-tree cuts, shelterwood cuts, and thinnings. Maximum patch size for regeneration would range from 25 to 80 acres. This would provide edge habitat for species such as deer, quail, and turkey. In the first planning period, this alternative ranks first in thinnings, third in even-aged regeneration cuts, and fifth in longleaf pine restoration (*see* Table 3.9). The high level of thinning (56,054 acres) in combination with prescribed burning would improve habitat conditions in pine plantations for the majority of native species by opening the canopy and improving ground cover conditions. This would benefit species such as ground-nesting birds and the gopher tortoise and its associates, like the indigo snake. The amount of regeneration cutting would be reduced from the historic level in the 1985 Forest Plan because the rotation, 120 years, in this alternative would be much longer than the 1985 Forest Plan rotation. As a result the average age of the pine forests would increase during the next 50+ years. This is reflected in the FORPLAN wildlife habitat indices for fox squirrel and pileated woodpecker, as both show an increasing trend during the next 50 years (*see* Figure 3.10). However, the low level of longleaf pine restoration (1,860 acres in the first planning period) (*see* Table 3.9) would delay the long-term improvement of habitat for species that require large pines. The current condition of off-site slash pine would not allow for the growth of these trees into trees of suitable size for species such as fox squirrels, pileated woodpeckers, and RCWs.

RCW HMAs would be the same as the tentative RCW HMAs that were described in the RCW EIS. This alternative would have the most acres designated for RCW habitat management. This is due to the west-central HMA on the Ocala NF. This HMA does not appear in other alternatives. About 72.6 percent of all forestland on the forests would be within an RCW HMA. Percentages by ranger district would be: Apalachicola-100, Wakulla-100, Osceola-100, Lake George-18.8, and Seminole-17.3. RCW management would follow *Interim Standards and Guidelines for Protection and Management of RCW Habitat Within ¾ Mile of Colony Sites*.

The forests would remain open to cross-country travel unless otherwise posted closed. It has the potential to disturb wildlife. It also would provide a source of disturbance to any wildlife species that avoid human contact, such as Florida black bears and ground-nesting birds—Bachman's sparrow, wild turkey, and bobwhite quail. Disturbances can include interruption of nesting habitat. The greater the mobility—as with motorized vehicles, bicycles, and horses—the more potential for disturbance.

This alternative is tied for third in lands unsuitable for timber production (*see* Table 3.35). About 44 percent of forestlands would be unsuitable for timber production, some of which would be allocated to wilderness, special interest areas, research natural areas, and recreation emphasis areas. In these areas, wildlife habitat manipulation through active management could be more difficult. Thinning and restoration harvests are less likely to occur in these areas. Additional coordination needs also could increase the costs of management for activities such as prescribed burning and installing artificial cavities for RCWs in these areas. However, the remote nature of these areas would benefit animals, such as Florida black bear and nesting wading bird colonies.

Sandhill and Scrubby Flatwoods. This alternative has the lowest number of acres in the early successional stage (1,860 acres) of this habitat association; thus it has some of the highest acres in the sapling and mid-successional stage (41,969 acres) (*see* Table 3.12). Species favoring early successional habitat conditions would have reduced amounts of habitat in this alternative Depending on site-preparation techniques, habitat conditions of the understory may be either ruderal or intact herbaceous native ground cover. The extensive prescribe burning program would maintain habitat conditions for these early successional species in the mid- and late successional stages of this habitat association, by stimulating a rich herbaceous understory with a relatively open canopy. Species favoring the mid- and late successional stages of this habitat association would find an abundance of habitat (52,984 acres) in this alternative (*see* Table 3.12). The amount of late successional of this habitat association would be the same across all alternatives (32,544 acres). Cavity-nesting birds would especially benefit from these habitat conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Mesic Flatwoods and Wet Flatwoods. This alternative ranks fourth in the number of acres in the early successional stage (2,097 acres) of this habitat association, with some of the highest acres in the sapling and mid-successional stages (357,358 acres) (*see* Table 3.12). Species favoring early successional habitat conditions would have reduced amounts of habitat in this alternative. Depending on site-preparation techniques habitat conditions of the understory may be either ruderal or intact herbaceous native ground

cover. However, the extensive prescribe burning program would provide suitable habitat conditions in the mid- and late successional stages of this habitat association by producing a rich herbaceous understory with a relatively open pine canopy. The amount of late successional stage of this habitat association would be the same across all alternatives (83,533 acres) (*see* Table 3.12). Cavity-nesting birds would especially benefit from these habitat conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Xeric Hammock, Upland Hardwood Forest, and Slope Forest. The majority of this habitat association is in the sapling to mid-successional stages, 15,859 acres out of a total of 18,165 acres (*see* Table 3.12). Changes in this habitat association primarily would result from natural processes.

This alternative would protect numerous small blocks of xeric hammock, upland hardwood forest, and slope forest habitat on about 20,000 acres. These areas would provide good hard mast production, especially myrtle oak acorns (Harlow et al., 1980), benefiting species that utilize acorns as a significant food source—Florida black bears, wild turkeys, white-tailed deer, and both squirrel species.

Scrub. This alternative ranks highest in the early successional stage (49,820 acres) of this habitat association and consequently lowest in the late successional stage (10,969 acres) (*see* Table 3.12). The sapling and mid-successional stages of sand pine scrub (145,354 acres) do not differ significantly by alternative (*see* Table 3.12), since the vast majority of the harvest is coming from the older age classes. Two of the species favored by the creation of early successional sand pine scrub include scrub-jay and sand skink. Changes in this habitat association also may result from natural processes, such as windstorms and lightning-ignited fires.

The majority of this habitat association would be assigned as DFC 8.3, sand pine, artificial regeneration, small openings (*see* Table 2.1). Timber management would be even-aged with clearcuts and predominantly artificial regeneration. The rotation would be 50 years. Maximum opening size would be 120 acres. Openings of this size would potentially provide habitat for about three scrub-jay families. This would allow for some limited interaction between family groups.

Two areas would be maintained in young oak scrub—Pinecastle Bombing Range and the scrub portions of Juniper Prairie Wilderness. The Pinecastle Bombing Range has fires ignited at intervals frequent enough to maintain about 5,500 acres of the area in young oak scrub that are suitable for scrub-jays. Juniper Prairie Wilderness has been receiving natural ignitions at a rate that would maintain about 8,900 acres in young oak scrub suitable for scrub-jays. This alternative would be similar to Alternatives B and C in the number of acres of young oak scrub that is maintained in time and place at about 14,400 acres.

Bottomland Forest, Floodplain Swamp, Hydric Hammock, Baygall, and Basin, Dome, and Strand Swamps. This alternative ranks second in the number of acres in the early successional stage (3,931 acres) of this habitat association (*see* Table 3.12). In the mid- and late successional stages this alternative is very similar to Alternatives B, D, and E, with about 168,000 acres (*see* Table 3.12). Changes in these habitat associations also

would primarily depend on natural processes—such as windstorms, periodic flooding, and lightning-ignited fires.

Hardwood/cypress stands would be classified as suitable for timber production. There would be some potential to affect riparian hardwood habitats during harvest activities in these habitat associations. Forestwide BMPs would help to minimize these effects. There would be reductions in some hard mast producers, such as oaks, when stands are first cut and regenerated. This effect would not be significant for several decades, until more acres are shifted to the younger age classes. This is reflected in the FORPLAN habitat indices for gray squirrel and pileated woodpecker as they continue to rise for the next 30 years and then begin to level off (*see* Figure 3.10).

Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs. These habitat associations would be unsuitable for timber production. Changes in these habitat associations would primarily depend on natural processes and the frequency and intensity of the prescribed burning program. These habitat associations have evolved with frequent lightning-ignited fires, generally in spring and early summer.

Aquatic. Aquatic habitat associations are treated similarly throughout all alternatives. Changes in these habitat associations from management would be limited by the application of the silvicultural BMPs. Changes that do occur generally would be the result of natural processes.

Alternative B

Timber management practices would be uneven-aged in mature longleaf/slash pine, thinning of dense stands and restoration of longleaf pine sites. This would move the forests toward a diverse patch size structure, with opening sizes from ¼ to 40 acres. Small patch sizes (¼ to 2 acres) in modified group selection would promote a more continuous forest cover than even-aged management. This would favor forest interior species. The modified group selection would require large trees on most acres, at least 6 trees per acre greater than 18 inches DBH. This would make large snags available across the entire landscape. This would benefit cavity nesters, especially pileated woodpeckers, that require large snags in which to construct their nest cavities. Openings larger than 2 acres would not be common in mature stands, species adapted to large size early successional stage habitats would not be favored. Species adapted to a forest canopy interspersed with small openings, such as brown-headed nuthatches and pine warblers, would be favored by this action.

About 66.7 percent of all forestland would be within an RCW HMA. Percentages by ranger district would be: Apalachicola-100, Wakulla-100, Osceola-82.5, Lake George-8.4, and Seminole-10. The Pinhook area in the Osceola NF would not be included in the RCW HMA, because there are no known RCW clusters and habitat conditions of young plantations interspersed in swamps are unsuitable for RCWs. The west-central RCW HMA on the Ocala NF would not be included, because there has not been an active cluster since 1989 and the habitat is highly fragmented with unsuitable habitat and private property making management, especially prescribed burning, prohibitive. The nearest

active cluster to this area is 9½ miles away. RCWs would be managed as directed by the RCW EIS.

Restricting motorized vehicles to open, numbered roads or designated trails at all times would decrease the potential disturbance to wildlife, especially for species favoring remote habitat such as the Florida black bear. Nonmotorized travel—hikers and bicyclists— would not be restricted, so some potential for disturbance would still exist.

This alternative ranks second in lands unsuitable for timber production (*see* Table 3.35). About 47 percent of forestlands would be unsuitable for timber production, some of which would be allocated to wilderness, special interest areas, research natural areas, and recreation emphasis areas. In these areas, through active management could be more difficult. Thinning and restoration harvests are less likely to occur in these areas. Additional coordination needs could increase the costs of management for activities such as prescribed burning and installing artificial cavities for RCWs in these areas. However, the remote nature of these areas would benefit animals such as Florida black bear and nesting wading bird colonies.

Sandhill and Scrubby Flatwoods. This alternative has similar number of acres in the early successional stage (9,682 acres) of this habitat association as Alternatives C, D, and E (*see* Table 3.12); thus it has similar amounts in the sapling and mid-successional stage. The majority of the acres in early successional habitat would result from longleaf pine restoration projects. Ground cover conditions in these areas are best described as ruderal due to past management practices. Species favoring these habitat conditions would have a fair amount of this habitat association. The extensive prescribe burning program would provide habitat with a rich herbaceous understory and relatively open canopy conditions for species favoring these conditions. Species favoring the mid- and late successional stages of this habitat association would still find an abundance of habitat (49,072 acres) in this alternative (*see* Table 3.12). The amount of late successional stage of this habitat association would be the same across all alternatives (32,544 acres) (*see* Table 3.12). Cavity-nesting birds would especially benefit from these habitat conditions. Small openings in the mid- and late successional stages of this habitat association would be found in selected areas as the result of group selection harvests. Species preferring a diverse landscape would benefit from these conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Mesic Flatwoods and Wet Flatwoods. This alternative ranks the lowest in number of acres in the early successional stage (404 acres) of this habitat association, with some of the highest acres in the mid- and late successional stages (344,036 acres) (*see* Table 3.12). Species favoring early successional habitat conditions would have very little of this successional stage. However, the extensive prescribe burning program would provide suitable habitat conditions in the mid- and late successional stages of this habitat association by producing a rich herbaceous understory with a relatively open pine canopy. The amount of late successional stage of this habitat association would be the same across all alternatives (83,533 acres) (*see* Table 3.12). Cavity-nesting birds would especially benefit from these habitat conditions. Small openings in the mid- and late successional stages of this habitat association would be found in selected areas as the

result of group selection harvests. Species preferring a diverse landscape also may benefit from these conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Xeric Hammock, Upland Hardwood Forest, and Slope Forest. The majority of this habitat association is in the sapling to mid-successional stages, 15,859 acres out of a total of 18,165 acres (*see* Table 3.12). Changes in this habitat association would result primarily from natural processes.

Scrub. This alternative ranks fourth in the early successional stage (32,341 acres) of this habitat association and consequently ranks among the highest in the late successional stage (28,448 acres) (*see* Table 3.12). The sapling and mid-successional stages of sand pine scrub (145,354 acres) do not differ significantly by alternative (*see* Table 3.12), since the vast majority of the harvest is coming from the older age classes. Two species favored by the creation of early successional sand pine scrub include scrub-jay and sand skink. These species may not be as numerous as in Alternatives A, C, or E. Changes in this habitat association also may result from natural processes, such as windstorms and lightning-ignited fires.

The majority of the sand pine scrub habitat association would be assigned as DFC 8.2, sand pine, mixed regeneration, moderate openings. Maximum opening size would be 160 acres. Openings of this size potentially would provide habitat for about four scrub-jay families. This would allow for some limited interaction between family groups. Rotation age would be 50 years. Five percent of the suitable timber acres in sand pine scrub would be in the 55-80 year age class at any one time.

Two areas would be maintained in young oak scrub—Pinecastle Bombing Range and the scrub portions of Juniper Prairie Wilderness. The Pinecastle Bombing Range has fires ignited at intervals frequent enough to maintain about 5,500 acres of the area in young oak scrub that is suitable for scrub-jays. Juniper Prairie Wilderness also recently has been receiving ignitions at a rate that would maintain about 8,900 acres in young oak scrub suitable for scrub-jays. This alternative would be similar to Alternatives A and C in the number of acres of young oak scrub, about 14,400 acres, that is maintained in time and place.

A large portion, about 13,941 acres, of the Ancient Island scrub would be designated as an RNA. RNAs are unsuitable for timber production, therefore funding from the timber budget could not be used for habitat management, timber harvest. Funding for habitat management would have to come from other sources. These funding sources may or may not be sufficient for needed management of the area. Ancient Island has a high concentration of rare endemic species that require early successional scrub habitat. Without the management to produce this early successional scrub habitat many species in this area would be negatively impacted.

Bottomland Forest, Floodplain Swamp, Hydric Hammock, Baygall, and Basin, Dome, and Strand Swamps. This alternative ranks lowest in the number of acres in the early successional stage (1,851 acres) of this habitat association, along with Alternatives D and E (*see* Table 3.12), since this type is classified as unsuitable for timber production.

This would decrease the chance of fragmenting riparian hardwood corridors that are valuable for Neotropical migrants. In the mid- and late successional stages this alternative is very similar to Alternatives D and E, with about 170,000 acres (*see* Table 3.12). Changes in these habitat associations also would primarily depend on natural processes—such as windstorms, periodic flooding, and lightning-ignited fires.

Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs. These habitat associations are unsuitable for timber production. Changes in these habitat associations would primarily depend on natural processes and the frequency and intensity of the prescribed burning program. These habitat associations have evolved with frequent lightning-ignited fires, generally in spring and early summer.

Aquatic. Aquatic habitat associations are treated similarly throughout all alternatives. Changes in these habitat associations from management would be limited by the application of the silvicultural BMPs. Changes that do occur generally would be the result of natural processes.

Alternative C

This alternative proposes even-aged management in longleaf/slash pine within RCW HMAs with a maximum opening sizes ranging from 25 to 40 acres, depending on the HMA's management intensity level (MIL). The Apalachicola RCW HMA would be MIL 1 and would allow a maximum opening size of 40 acres. Wakulla and Osceola RCW HMAs would be MIL 3. Riverside Island and Paisley RCW HMA would be MIL 4. MILs 3 and 4 would allow a maximum opening size of 25 acres. These openings would provide edge and early successional stages in longleaf/slash pine. Species such as deer, quail, and turkey would benefit from these early successional stages. However, this effect would be reduced because the amount of regeneration cuts would be less than the historic levels of the past as the rotation in this alternative, 100-120 years, is much longer than the rotation in the 1985 Forest Plan. As a result the average age of the pine forests would be increasing during the next 50+ years.

Longleaf/slash pine outside the RCW HMAs would be managed primarily based on a 60-80 year rotation and a maximum opening size of 80 acres. The shorter rotations and the lack of RCW-foraging guideline requirements would result in the long-term structuring of the forest into 10-80 acre patches of relatively young (< 80 years old) pine habitat. This would not be optimal habitat for cavity nesters or forest interior species. This would provide a mosaic of age classes and would be favorable to white-tailed deer and turkeys.

About 66.5 percent of all forestland would be within an RCW HMA. Percentages by ranger district would be: Apalachicola-100, Wakulla-99.2, Osceola-82.5, Lake George-8.4, and Seminole-10. The Pinhook area on the Osceola NF would not be included in the RCW HMA, because there are no known RCW clusters and habitat conditions of young plantations interspersed in swamps are not suitable for RCWs. The west-central RCW HMA on the Ocala NF would not be included, because there has not been an active cluster since 1989 and the habitat is highly fragmented with unsuitable habitat and private property making management, especially burning, prohibitive. The nearest active cluster

to this area is 9½ miles away. The reduction in the RCW HMA on the Wakulla RD is because of an area designated as DFC 6.5, energy wood. This area would be unsuitable as RCW habitat. RCWs would be managed as directed by the RCW EIS with the exception that foraging requirements for RCWs would be reduced on the Apalachicola RD. The effects of and the rationale for this reduction is explained fully in the Biological Assessment (Appendix F).

This alternative would adopt an access policy similar to Alternative A, with similar effects. The only difference would be that no roads would be closed in Alternative C (*see* Figure 3.11). Alternative C would allow the highest level of disturbance by people and vehicles to ground-nesting birds and wildlife that prefer remote habitat—like black bears, nesting wading birds, and nesting vultures.

This alternative ranks lowest in lands unsuitable for timber production (*see* Table 3.35). About 29 percent of forestlands would be unsuitable for timber production, some of which would be allocated to wilderness, special interest areas, research natural areas, and recreation emphasis areas. In these areas, wildlife habitat manipulation through active management could be more difficult. Thinning and restoration harvests are less likely to occur in these areas. Additional coordination needs also could increase the costs of management for activities such as prescribed burning and installing artificial cavities for RCWs in these areas. However, the remote nature of these areas would benefit animals such as Florida black bear and nesting wading bird colonies. These effects would be the least in this alternative.

Sandhill and Scrubby Flatwoods. This alternative ranks highest in the number of acres in the early successional stage (11,274 acres) of this habitat association (*see* Table 3.12). Some of these acres may be in a ruderal condition as the result of intensive site preparation or past management practices. This alternative has a lower number of acres in the sapling and mid-successional stage in this habitat association. Species favoring the mid- and late successional stages of this habitat association would find slightly smaller amounts of habitat (48,277 acres) in this alternative (*see* Table 3.12). The amount of late successional stage (32,544 acres) of this habitat association would be the same across all alternatives (*see* Table 3.12). Cavity-nesting birds would have habitat conditions similar to those currently available. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Mesic Flatwoods and Wet Flatwoods. This alternative ranks highest in the number of acres in the early successional stage (7,105 acres) of this habitat association (*see* Table 3.12). Some of these acres may be in a ruderal condition as the result of intensive site preparation or past management practices. This alternative has a slightly lower number of acres in the sapling and mid-successional stages (352,350 acres) than the other alternatives for this habitat association (*see* Table 3.12). The amount of late successional stage (83,533 acres) of this habitat association would be the same across all alternatives (*see* Table 3.12). Cavity-nesting birds would have slightly reduced habitat from these conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Xeric Hammock, Upland Hardwood Forest, and Slope Forest. The majority of this habitat association is in the sapling to mid-successional stages, 15,859 acres out of a total of 18,165 acres (*see* Table 3.12). Changes in this habitat association would result primarily from natural processes.

Scrub. This alternative ranks second highest in the early successional stage (40,895 acres) of this habitat association and consequently lower in the late successional stage (19,894 acres) (*see* Table 3.12). The sapling and mid-successional stages of sand pine scrub (145,354 acres) do not differ significantly by alternative (*see* Table 3.12), since the vast majority of the harvest is coming from the older age classes. Two of the species favored by the creation of early successional sand pine scrub include scrub-jay and sand skink. Changes in this habitat association also may result from natural processes, such as windstorms and lightning-ignited fires.

The majority of this habitat association would be assigned as DFC 8.2, sand pine, mixed regeneration, moderate openings. Maximum opening size would be 160 acres. Openings of this size potentially would provide habitat for about four scrub-jay families. This would allow for some limited interaction between family groups. Rotation age would be 50 years. Five percent of the suitable timber acres in sand pine scrub would be in the 55-80 year age class at any one time.

Two areas would be maintained in young oak scrub—Pinecastle Bombing Range and the scrub portions of Juniper Prairie Wilderness. The Pinecastle Bombing Range has fires ignited at intervals frequent enough to maintain about 5,500 acres of the area in young oak scrub that is suitable for scrub-jays. Juniper Prairie Wilderness also has been receiving ignitions at a rate that would maintain about 8,900 acres in young oak scrub suitable for scrub-jays. This alternative would be similar to Alternatives A and B in the number of acres of young oak scrub, about 14,400 acres, that is maintained in time and place.

Bottomland Forest, Floodplain Swamp, Hydric Hammock, Baygall, and Basin, Dome, and Strand Swamps. This alternative ranks highest in the number of acres in the early successional stage (17,272 acres) of this habitat association (*see* Table 3.12), exceeding all other alternatives by a factor of at least four. Common yellowthroat and red-wing blackbirds can be found in these early successional areas. In the mid- and late successional stages this alternative ranks the lowest (154,082 acres) (*see* Table 3.12). These areas are important for mast production. There would be a reductions in hard mast producers, such as oaks, when stands are cut and regenerated. This effect would not be significant for several decades, until more acres are shifted to the younger age classes at which time the earlier cut stands would begin to produce mast. This is reflected in the FORPLAN habitat indices for gray squirrel as it continues to rise for the next 30 years and then begin to level off when the older age classes become regulated (*see* Figure 3.10). There is some potential to affect riparian habitats during harvest activities in these habitat associations. Forestwide BMPs would help to minimize these effects. Changes in these habitat associations also would depend on natural processes—such as windstorms, periodic flooding, and lightning-ignited fires.

Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs. The unforested wetland habitat associations are treated similarly throughout all alternatives. These habitat associations are unsuitable for timber production. Changes in these habitat associations primarily would depend on natural processes and the frequency and intensity of the prescribed burning program. These habitat associations have evolved with frequent lightning-ignited fires, generally in spring and early summer.

Aquatic. Aquatic habitat associations are treated similarly throughout all alternatives. Changes in these habitat associations from management would be limited by the application of the silvicultural BMPs. Changes that do occur generally would be the result of natural processes.

Alternative D

A portion of the longleaf/slash pine would be allocated primarily to the current even-aged patch size structure and a portion to an uneven-aged diverse patch size structure. The mixture of the current patch size and a diverse patch size structure would provide a diversity of habitats, benefiting species that favor early successional stages and also providing habitat for species that favor mid- to late successional stages, such as RCWs and pileated woodpeckers. Longleaf and slash pine outside of RCW HMAs would be managed primarily based on a 100-120-year rotation and a maximum clearcut size of 40 acres. The lack of RCW-foraging guideline requirements would result in a long-term structuring of the forests into 10-40 acre patches. Effects would be similar to Alternative B.

RCW HMAs would be the same as in Alternatives B and E. About 66.7 percent of all forestland would be within an RCW HMA. Percentages by ranger district would be: Apalachicola-100, Wakulla-100, Osceola-82.5, Lake George-8.4, and Seminole-10. The Pinhook area on the Osceola NF would not be included in the RCW HMA, because there are no known RCW clusters and habitat condition of young plantations interspersed in swamps are unsuitable for RCWs. The west-central RCW HMA on the Ocala NF would not be included, because there has not been an active cluster since 1989 and the habitat is highly fragmented with unsuitable habitat and private property making management, especially prescribed burning, prohibitive. The nearest active cluster is 9½ miles away. RCWs would be managed as directed by the RCW EIS.

Motorized vehicles would be required to stay on open, numbered roads or designated trails, except during hunting season, when they could traverse undesignated trails. Cross-country travel would not be allowed. This would result in less potential for disturbing wildlife than in Alternatives A and C, but more than in Alternative B.

This alternative would have the most lands unsuitable for timber production (*see* Table 3.35). About 50 percent of forestlands would be unsuitable for timber production, some of which would be allocated to wilderness, special interest areas, research natural areas, and recreation emphasis areas. In these areas, wildlife habitat manipulation through active management could be more difficult. Thinning and restoration harvests are less likely to occur in these areas. Additional coordination needs also could increase the costs of management for activities such as prescribed burning and installing artificial cavities

for RCWs in these areas. However, the remote nature of these areas would benefit animals such as Florida black bear and nesting wading bird colonies.

Sandhill and Scrubby Flatwoods. This alternative has a similar number of acres in the early successional stage (9,258 acres) of this habitat association as Alternatives B, C, and E (*see* Table 3.12); thus it has similar amounts in the sapling and mid-successional stage. The majority of the acres in early successional habitat would result from longleaf pine restoration projects. Ground cover conditions in these areas are best described as ruderal due to past management practices. The extensive prescribe burning program would provide habitat with a rich herbaceous understory and relatively open canopy conditions for species favoring these conditions. Species favoring mid- and late successional stages of this habitat association would still find an abundance of habitat (49,284 acres) in this alternative (*see* Table 3.12). The amount of late successional stage (32,544 acres) of this habitat association would be the same across all alternatives (*see* Table 3.12). Cavity-nesting birds would especially benefit from these habitat conditions. Small openings in the mid- and late successional stages of this habitat association would be found in selected areas as the result of group selection harvests. Species preferring a diverse landscape would benefit from these conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Mesic Flatwoods and Wet Flatwoods. This alternative ranks third in the number of acres in the early successional stage (2,423 acres) of this habitat association, with some of the highest acres in the sapling and mid-successional stages (357,032 acres) (*see* Table 3.12). The amount of late successional stage (83,533 acres) of this habitat association would be the same across all alternatives (*see* Table 3.12). Cavity-nesting birds would especially benefit from these habitat conditions. Small openings in the mid- and late successional stages of this habitat association would be found in selected areas as the result of group selection harvests. Species preferring a diverse landscape also may benefit from these conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Xeric Hammock, Upland Hardwood Forest, and Slope Forest. The majority of this habitat association is in the sapling to mid-successional stages, 15,859 acres out of a total of 18,165 acres (*see* Table 3.12). Changes in this habitat association primarily would result from natural processes.

Scrub. This alternative ranks lowest in the early successional stage (30,861 acres) of this habitat association and consequently highest in the late successional stage (29,928 acres) (*see* Table 3.12). The sapling and mid-successional stages of sand pine scrub (145,354 acres) do not differ significantly by alternative (*see* Table 3.12), since the vast majority of the harvest is coming from the older age classes. Two of the species favored by the creation of early successional sand pine scrub include scrub-jay and sand skink. Changes in this habitat association also may result from natural processes—such as windstorms and lightning-ignited fires.

The majority of this habitat association would be assigned as DFC 8.3, sand pine, artificial regeneration, small openings (*see* Table 2.1). Maximum opening size would be 120 acres. Openings of this size potentially would provide habitat for about three

scrub-jay families. This would allow for some limited interaction between family groups. Rotation age would be 50 years. Five percent of the suitable timber acres in sand pine scrub would be in the 55-80 year age class at any one time.

A large portion, about 13,941 acres, of the Ancient Island scrub would be designated as DFC 8.1 (sand pine, natural regeneration, large openings). Ancient Island has a high concentration of rare endemic species that require early successional scrub habitat. This DFC would provide for up to 320-acre openings. Openings of this size potentially would provide habitat for about eight scrub-jay families. This would allow for some a greater amount of interaction between family groups. This would provide habitat for species, such as scrub-jay, that are adapted to large-scale disturbances than in most other areas of the forests. However, this is still smaller than the scale created by natural disturbance events like large lightning-ignited fires and storms.

Three areas (8,195 acres) would designated as scrub-jay management areas (DFC 8.4) (*see* Table 2.1). These areas would first be clearcut when the existing stands become merchantable about 35 years old, then would be kept in early scrub oak by the use of prescribed fire. These areas would provide habitat for numerous, > 100, scrub-jay families. This would allow for a large amount of interaction between family groups. Two other areas would be maintained in young oak scrub—Pinecastle Bombing Range and the scrub portions of the Juniper Prairie Wilderness. The Pinecastle Bombing Range has fires ignited at intervals frequent enough to maintain about 5,500 acres of the area in young oak scrub that is suitable for scrub-jays. Juniper Prairie Wilderness also recently has been receiving ignitions that would maintain about 8,900 acres in young scrub oak that would be suitable for scrub-jays. This alternative would provide the greatest number of acres, about 22,595 acres, of young oak scrub that is maintained in time and place.

Bottomland Forest, Floodplain Swamp, Hydric Hammock, Baygall, and Basin, Dome, and Strand Swamps. This alternative ranks low in the number of acres in the early successional stage (1,851 acres) of this habitat association, along with Alternatives B and E (*see* Table 3.12), since this type is classified as unsuitable for timber production. In the mid- and late successional stages, this alternative is very similar to Alternatives B and E, with about 170,000 acres (*see* Table 3.12). A wide variety of species use this habitat association, among them are yellow-throated warbler, wild turkey, cottonmouth, and black bear. Changes in these habitat associations also would primarily depend on natural processes—such as windstorms, periodic flooding, and lightning-ignited fires.

Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs. The unforested wetland habitat associations are treated similarly throughout all alternatives. These habitat associations are unsuitable for timber production. Changes in these habitat associations primarily would depend on natural processes and the frequency and intensity of the prescribed burning program. These habitat associations have evolved with frequent lightning-ignited fires, generally in spring and early summer.

Aquatic. Aquatic habitat associations are treated similarly throughout all alternatives. Changes in these habitat associations from management would be limited by the application of the silvicultural BMPs. Changes that do occur generally would be the result of natural processes.

Alternative E

This alternative would apply a mix of regeneration harvest methods. Uneven-aged management would be the primary method during the planning period (40,500 acres) and even-aged regeneration methods would be applied on about 1,878 acres (*see* Table 3.9). The large amount of thinning (52,015 acres) in combination with prescribed burning would improve habitat conditions in pine plantations for a large majority of native species, by opening the canopy and improving ground cover conditions. Thinning and burning would benefit species such as gopher tortoise and its associates, northern bobwhite quail, and many other ground-nesting birds.
Restoration of native tree species, primarily longleaf pine, would occur on about 20,000 acres. Restoration would be achieved primarily by thinning of mixed stands (8,000 acres) and clearcutting slash pine and planting longleaf pine (11,799 acres) (*see* Table 3.9). Clearcutting would create stands of early successional habitat. Ground cover conditions after treatment would depend on the condition of the ground cover before the restoration project. The objective of restoration is not just to replace slash pine with longleaf pine but also to restore the native ground cover. Species favoring early successional stages—such as ground-nesting birds, gopher tortoise, and its associates—would benefit immediately from this restoration effort. Long-term effects of this restoration would benefit species that prefer mature longleaf pine forests, such as fox squirrel and RCW.

About 66.7 percent of all forestland would be within an RCW HMA. Percentages by ranger district would be: Apalachicola-100, Wakulla-100, Osceola-87.9, Lake George-8.4, and Seminole-10. The Pinhook area on the Osceola NF would not be included in the RCW HMA, because there are no known RCW clusters and habitat condition of young plantations interspersed in swamps are unsuitable for RCWs. The west-central RCW HMA on the Ocala NF would not be included, because there has not been an active cluster since 1989 and the habitat is highly fragmented with unsuitable habitat and private property making management, especially prescribed burning, prohibitive. The nearest active cluster to this area is 9½ miles away. RCWs would be managed as directed by the RCW EIS, with the exception that foraging requirements for RCWs would be reduced on the Apalachicola RD, leave BA during thinning is reduced to 60 BA, and the 0-10 age class may exceed the guidelines during the 10-year period but must not exceed the guidelines at the end of the 10-year planning period. The effects of and the rationale for this reduction is explained fully in the Biological Assessment (Appendix F).

Restricting motorized vehicles and bicycles to open, numbered roads, designated trails, or unmarked travelways in designated areas would decrease the potential disturbance to wildlife compared to Alternatives A and C. This alternative would benefit species preferring remote habitat—such as Florida black bears, nesting vultures, and nesting wading birds. Ground-nesting birds also would benefit from the reduced level of cross-county travel. Hikers and horses would not be restricted and could travel cross-country, so some potential for disturbance would still exist.

This alternative is tied for third in lands unsuitable for timber production (*see* Table 3.35). About 44 percent of forestlands would be unsuitable for timber production, some of which would be allocated to wilderness, special interest areas, RNAs, and recreation

emphasis areas. In these areas, wildlife habitat manipulation through active management could be more difficult. Thinning and restoration harvests would be less likely to occur in these areas. Additional coordination needs could increase the costs of management for activities such as prescribed burning and installing artificial cavities for RCWs. These effects would be similar to the current alternative.

Sandhill Flatwoods and Scrubby Flatwoods. This alternative ranks highest in number of acres in the early successional stage (11,099 acres) of this habitat association (*see* Table 3.12). The majority of the acres in early successional habitat would result from longleaf pine restoration projects. Ground cover conditions in these areas are best described as ruderal due to past management practices. Species favoring these habitat conditions would have a fairly large amount of habitat. Additionally, the extensive prescribe burning program would provide suitable habitat conditions for species preferring a rich herbaceous understory with a relatively open canopy in the mid- and late successional stages. Species favoring the mid- and late successional stages of this habitat association would find an abundance of habitat (48,364 acres) in this alternative (*see* Table 3.12). The amount of late successional stage (32,544 acres) of this habitat association would be the same across all alternatives (*see* Table 3.12). Cavity-nesting birds would especially benefit from these habitat conditions. Small openings in the mid- and late successional stages of this habitat association would be found in selected areas as the result of group selection harvests. Species preferring a diverse landscape would benefit from these conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Mesic Flatwoods and Wet Flatwoods. This alternative ranks second in the number of acres in the early successional stage (2,578 acres) of this habitat association, with some of the highest acres in the sapling and mid-successional stages (356,877 acres) (*see* Table 3.12). The extensive prescribe burning program would provide suitable habitat conditions for species preferring a rich herbaceous understory with a relatively open canopy in the mid- and late successional stages. The amount of late successional stage (83,533 acres) of this habitat association would be the same across all alternatives (*see* Table 3.12). Cavity-nesting birds would especially benefit from these habitat conditions. Small openings in the mid- and late successional stages of this habitat association would be found in selected areas as the result of group selection harvests. Species preferring a diverse landscape would benefit from these conditions. Natural processes, such as windstorms and lightning-ignited fires, also would affect this habitat association.

Xeric Hammock, Upland Hardwood Forest, and Slope Forest. The majority of this habitat association is in the sapling to mid-successional stages, 15,859 acres out of a total of 18,165 acres (*see* Table 3.12). Changes in this habitat association primarily would result from natural processes.

Scrub. This alternative ranks third in the early successional stage (40,000 acres) of this habitat association and consequently third in the late successional stage (20,789 acres) (*see* Table 3.12). The sapling and mid-successional stages (145,354 acres) of sand pine scrub do not differ significantly by alternative (*see* Table 3.12), since the vast majority of the harvest is coming from the older age classes. Two of the species favored by the

creation of early successional sand pine scrub include scrub-jay and sand skink. Changes in this habitat association also may result from natural processes, such as windstorms and lightning-ignited fires.

The majority (200,818 acres) of this habitat association would be assigned as DFC 8.2, sand pine, mixed regeneration, moderate openings (*see* Table 2.1). Maximum opening size would be 160 acres. Openings of this size potentially would provide habitat for about four scrub-jay families. This would allow for some limited interaction between family groups. Rotation age would be 50 years. Five percent of the suitable timber acres in sand pine scrub would be in the 55-80 year age class at any one time. This would put slightly fewer acres into the young age classes than the current management. This alternative would provide about 40,000 acres of habitat for species preferring early successional scrub habitat during the planning period (*see* Table 3.12), next 10 years.
A portion, about 14,810 acres, of the Ancient Island scrub would be designated to DFC 8.1 (sand pine, natural regeneration, large openings) (*see* Table 2.1). Ancient Island has a high concentration of rare endemic species that require early successional scrub habitat. This DFC would be managed similar to the rest of the scrub, except natural regeneration would be emphasized and maximum opening size would be 320 acres. This would provide habitat for species that utilize large areas of early successional scrub habitat, like the scrub-jay and American kestrel.

One area (1,874 acres) would be designated as a scrub-jay management area (DFC 8.4) (*see* Table 2.1). This area would first be clearcut when the existing stands become merchantable, about 35 years old, then it would be kept in early oak scrub by the use of prescribed fire. This area would provide habitat for numerous, > 70, scrub-jay families. This would allow for a large amount of interaction between family groups. Two other areas also would be maintained in young oak scrub—Pinecastle Bombing Range and the scrub portions of the Juniper Prairie Wilderness. The Pinecastle Bombing Range has fires ignited at intervals frequent enough to maintain about 5,500 acres of the area in young oak scrub that is suitable for scrub-jays. Juniper Prairie Wilderness has been receiving ignitions, which would maintain about 8,900 acres in young oak scrub that would be suitable for scrub-jays. This alternative would provide the second greatest number of acres of young scrub oak, about 16,274 acres, that is maintained in time and place.

Bottomland Forest, Floodplain Swamp, Hydric Hammock, Baygall, and Basin, Dome, and Strand Swamps. This alternative ranks low in the number of acres in the early successional stage (1,851 acres) of this habitat association, along with Alternatives B and D (*see* Table 3.12), since this type is classified as unsuitable for timber production. In the mid- and late successional stages this alternative is very similar to Alternatives B and D, with about 170,000 acres (*see* Table 3.12). A wide variety of species use this habitat association, among them are yellow-throated warbler, wild turkey, cottonmouth, and black bear. Changes in these habitat associations also would primarily depend on natural processes—such as windstorms, periodic flooding, and lightning-ignited fires.

Bog, Seepage Slope, Depression Marsh, and Wet Prairie/Savannahs. The unforested wetland habitat associations are treated similarly throughout all alternatives. These habitat associations are unsuitable for timber production. Changes in these habitat

associations would primarily depend on natural processes and the frequency and intensity of the prescribed burning program. These habitat associations have evolved with frequent lightning-ignited fires, generally in spring and early summer.

Aquatic. Aquatic habitat associations are treated similarly throughout all alternatives. Changes in these habitat associations from management would be limited by the application of the silvicultural BMPs. Changes that do occur generally would be the result of natural processes. The primary zone has been expanded to include not just perennial lakes and ponds, but all seasonal lakes and ponds and all sinkholes open to the Floridan aquifer, forestwide standard WA-2. These guidelines are designed to protect water quality and soil productivity and would provide additional protection for these resources. These protections would minimize or eliminate the impacts on aquatic species for siltation and degradation of water quality.

FORPLAN Modeled Species

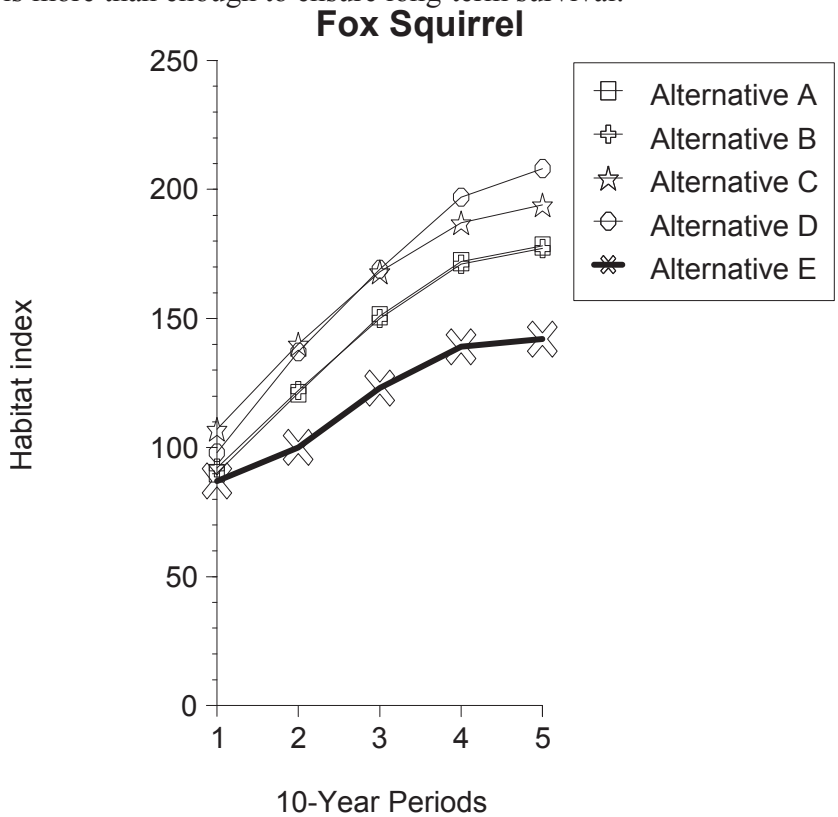
The FORPLAN model included habitat indices for eight selected species: fox squirrel, gopher tortoise, gray squirrel, northern bobwhite quail, pileated woodpecker, scrub-jay, white-tailed deer, and wild turkey.

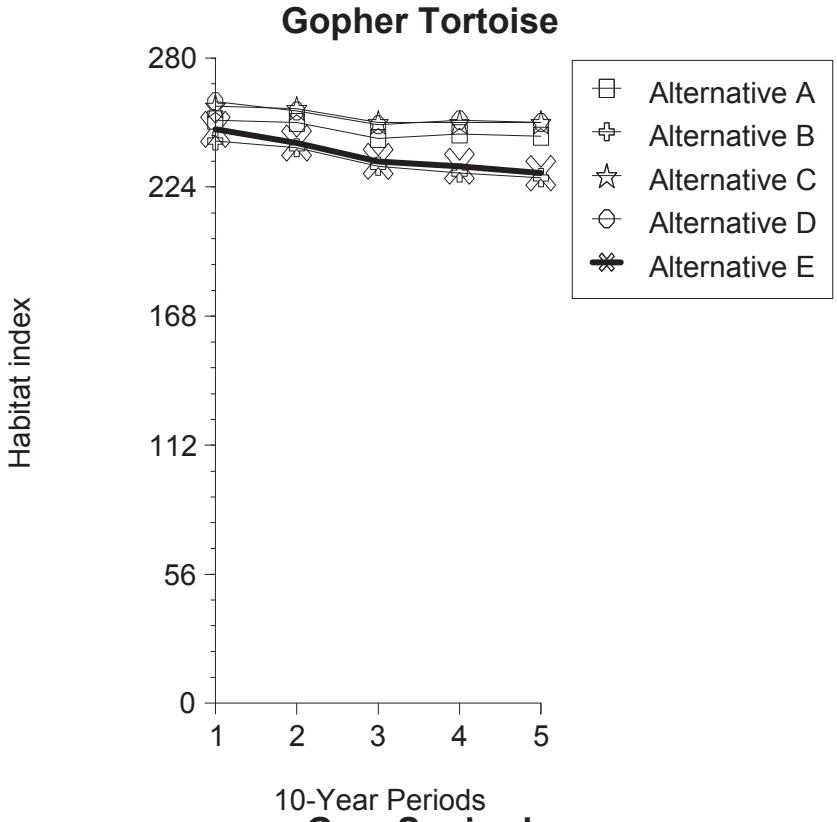
The habitat indices for northern bobwhite quail, white-tailed deer, and wild turkey were very similar for all alternatives and were stable to slightly increasing during the next five decades (Figure 3.10).

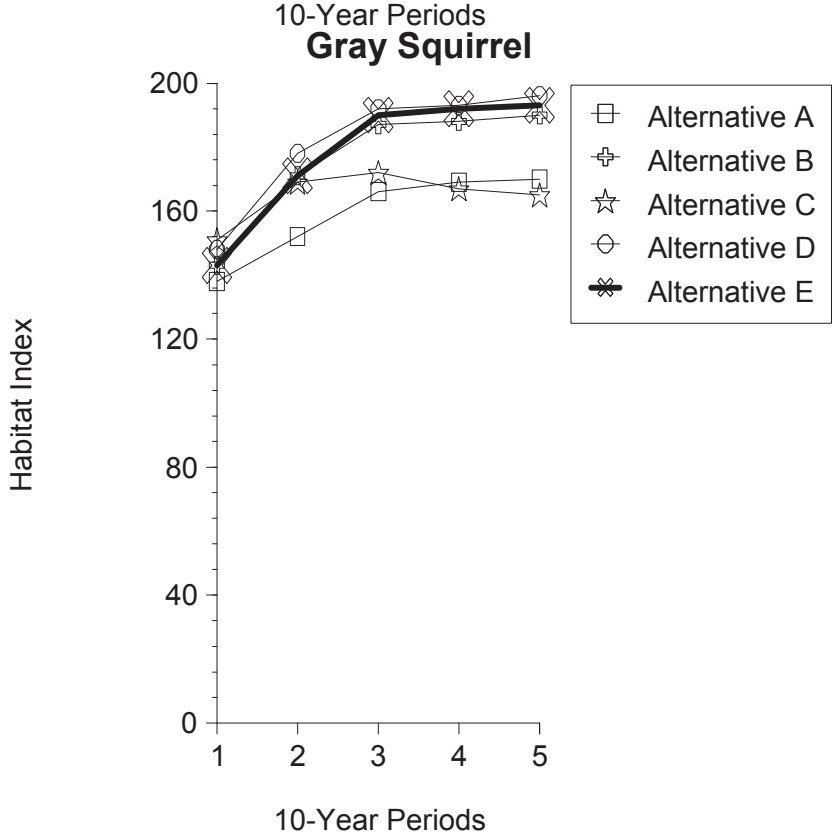
Fox squirrel, gray squirrel, and pileated woodpecker showed greatly increasing habitat indices during the next five decades. This is due to the aging of the forests, especially the hardwood component, that would occur in all alternatives. However, habitat indices for gray squirrel in Alternatives A and C were slightly lower, but still increasing in Alternative A and increasing through two decades with a slight decline in the later decades in Alternative C. This is due to the hardwood harvesting that would occur in those alternatives.

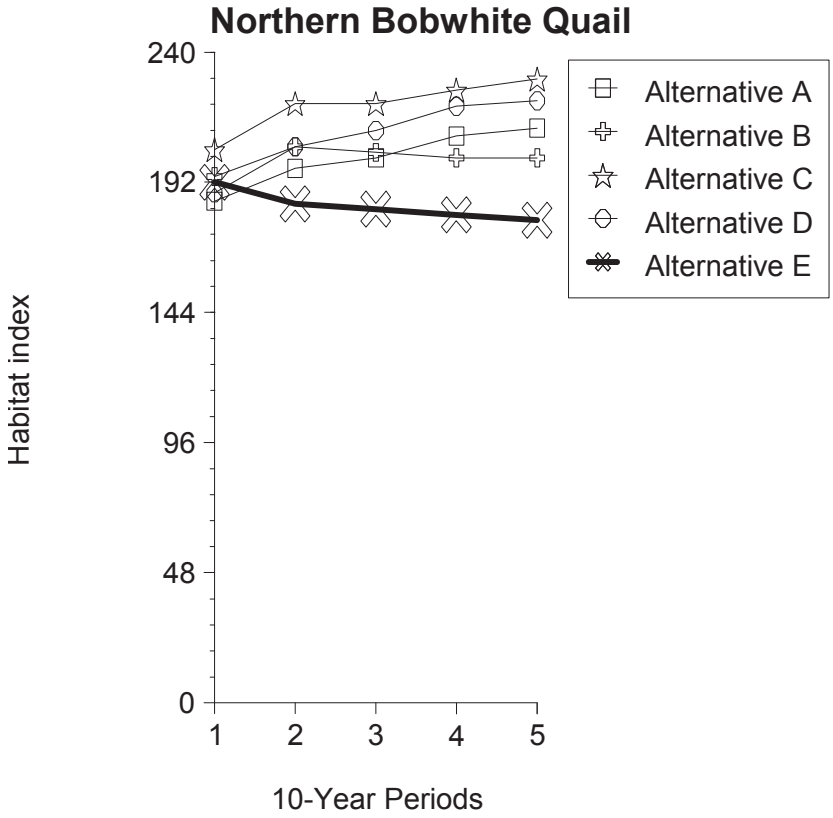
The habitat indices for gopher tortoise are similar in all alternatives, showing a very slight decline during the next five decades. This decline in gopher tortoise habitat capability is because of a current bulge in the 0-15 age class, currently optimal gopher tortoise habitat. This is due to extensive fires on the Ocala NF in 1985. This factor raises the indices to a level higher than can be maintained through the proposed management. The decline is carried into the future as a result of putting fewer acres into younger age classes, mainly in sand pine, in all alternatives. Cox, Inkley, and Kautz (1987) projected an expected mean extinction time of 200 years for a population of 60 individuals. Using a conservative estimate of 0.10 individuals per acre in sand pine scrub age 0-10, the range of alternatives would provide at least habitat for between 3,100-4,900 gopher tortoises in the young sand pine scrub. The sandhills/scrubby flatwoods would provide habitat for between 2,700-3,000 additional gopher tortoises. This figure is arrived at by using the early, mid-, and late successional stages and estimating 1 gopher tortoise per 20 acres. This provides habitat for between 5,800-7,900 gopher tortoises forestwide. The amount of suitable habitat provided, even with the projected decline in overall habitat capability, is more than enough to ensure long-term survival.

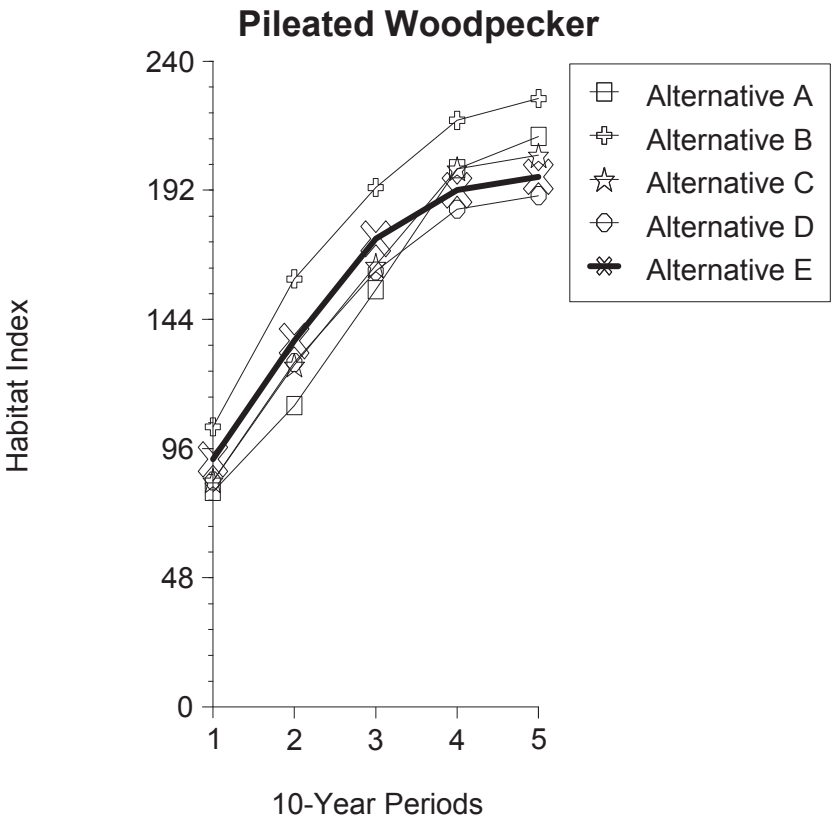
The scrub-jay habitat indices have a wide variation between alternatives. This is the result of differing amounts of habitat in the suitable timber base and variation in the scrub-jay management areas. This accounts for the part of the decline in some alternatives. Another factor in the decline is because of a current bulge in the 0-15 age class, currently optimal scrub-jay and gopher tortoise habitat. This is due to extensive fires on the Ocala NF in 1985. Scrub that is older than 15 years old is unsuitable for scrub-jays. The range of alternatives would provide for about 1,100-1,450 scrub-jay territories in the first 10 year period. This is calculated by 40 acres per territory in young sand pine scrub with 80 percent occupancy rate and 25 acres per territory in young oak scrub with 80 percent occupancy rate. Fitzpatrick, Woolfenden, and Kopeny (1991) state, ``Populations containing 30 or more scrub-jay territories probably are the smallest populations in which long-term survival is 90% guaranteed for 100 years or more." All alternatives provide for more than 35 times the number estimated for long-term survival of a population. The amount of suitable habitat provided, even with the projected decline in overall habitat capability, is more than enough to ensure long-term survival.

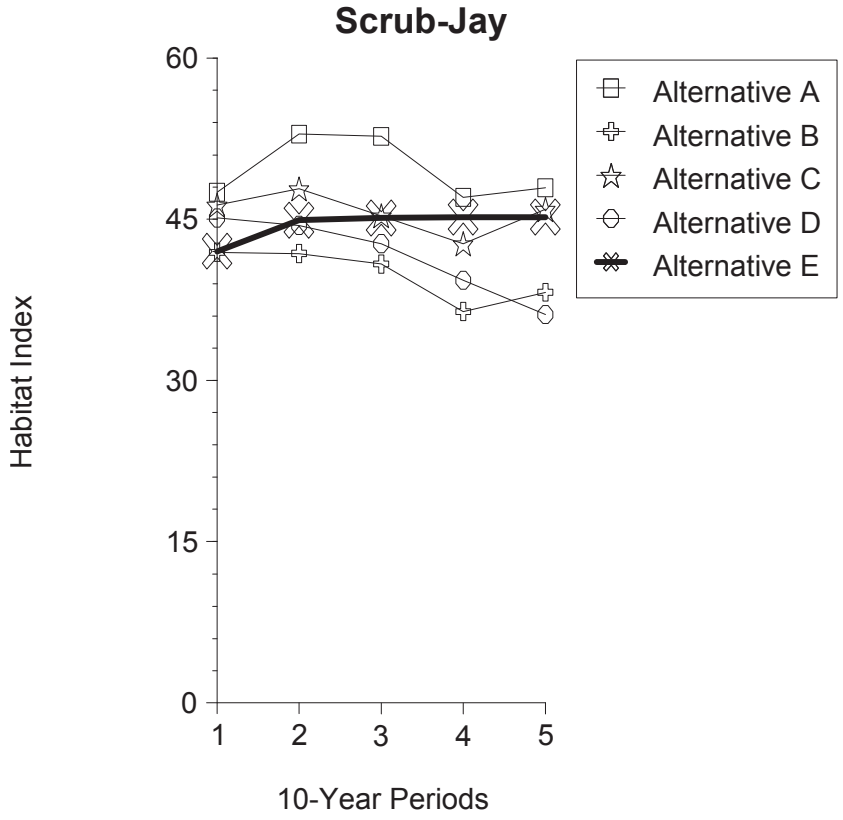


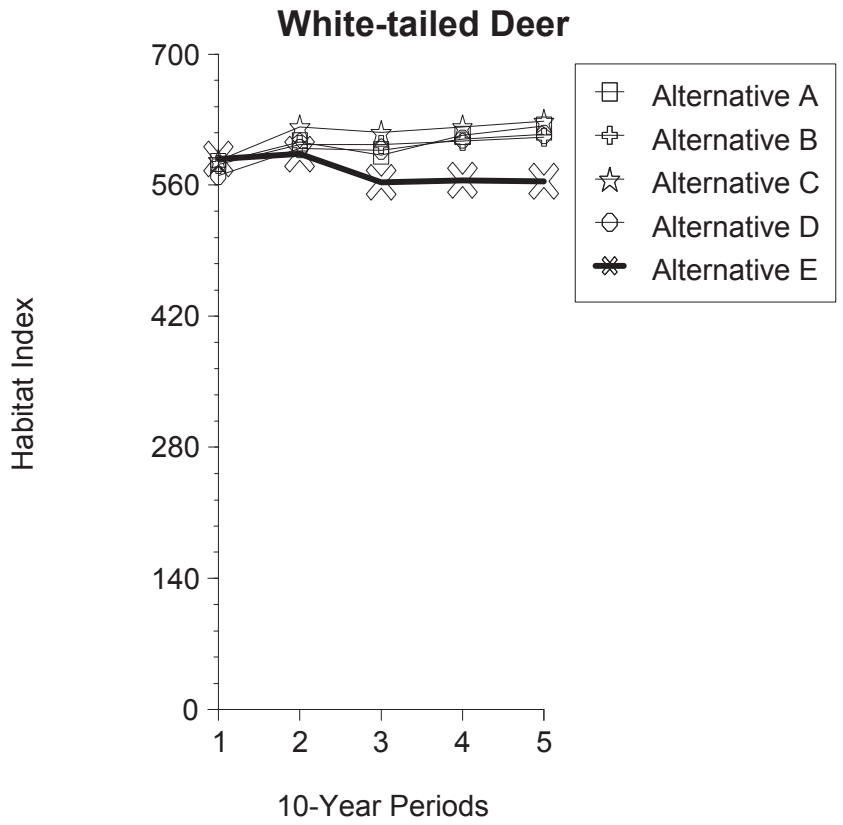

Gopher Tortoise
Habitat index
280
224
168
112
56
0
1
2
3
4
5
10-Year Periods
Alternative A
Alternative B
Alternative C
Alternative D
Alternative E


Gray Squirrel
Habitat Index
200
160
120
80
40
0
1
2
3
4
5
10-Year Periods
Alternative A
Alternative B
Alternative C
Alternative D
Alternative E


Northern Bobwhite Quail
240
192
144
96
48
0
Habitat index
1
2
3
4
5
10-Year Periods
Alternative A
Alternative B
Alternative C
Alternative D
Alternative E


Pileated Woodpecker
240
192
144
96
48
0
Habitat Index
1
2
3
4
5
10-Year Periods
Alternative A
Alternative B
Alternative C
Alternative D
Alternative E


Scrub-Jay
60
45
30
15
0
Habitat Index
1
2
3
4
5
10-Year Periods
Alternative A
Alternative B
Alternative C
Alternative D
Alternative E


White-tailed Deer
700
560
420
280
140
0
Habitat Index
1
2
3
4
5
10-Year Periods
Alternative A
Alternative B
Alternative C
Alternative D
Alternative E

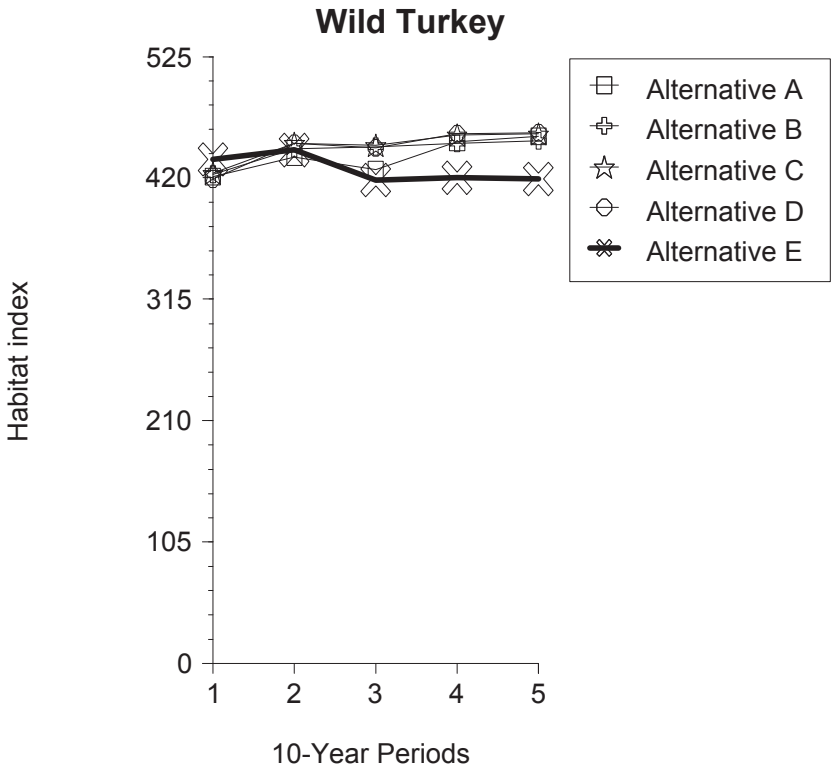
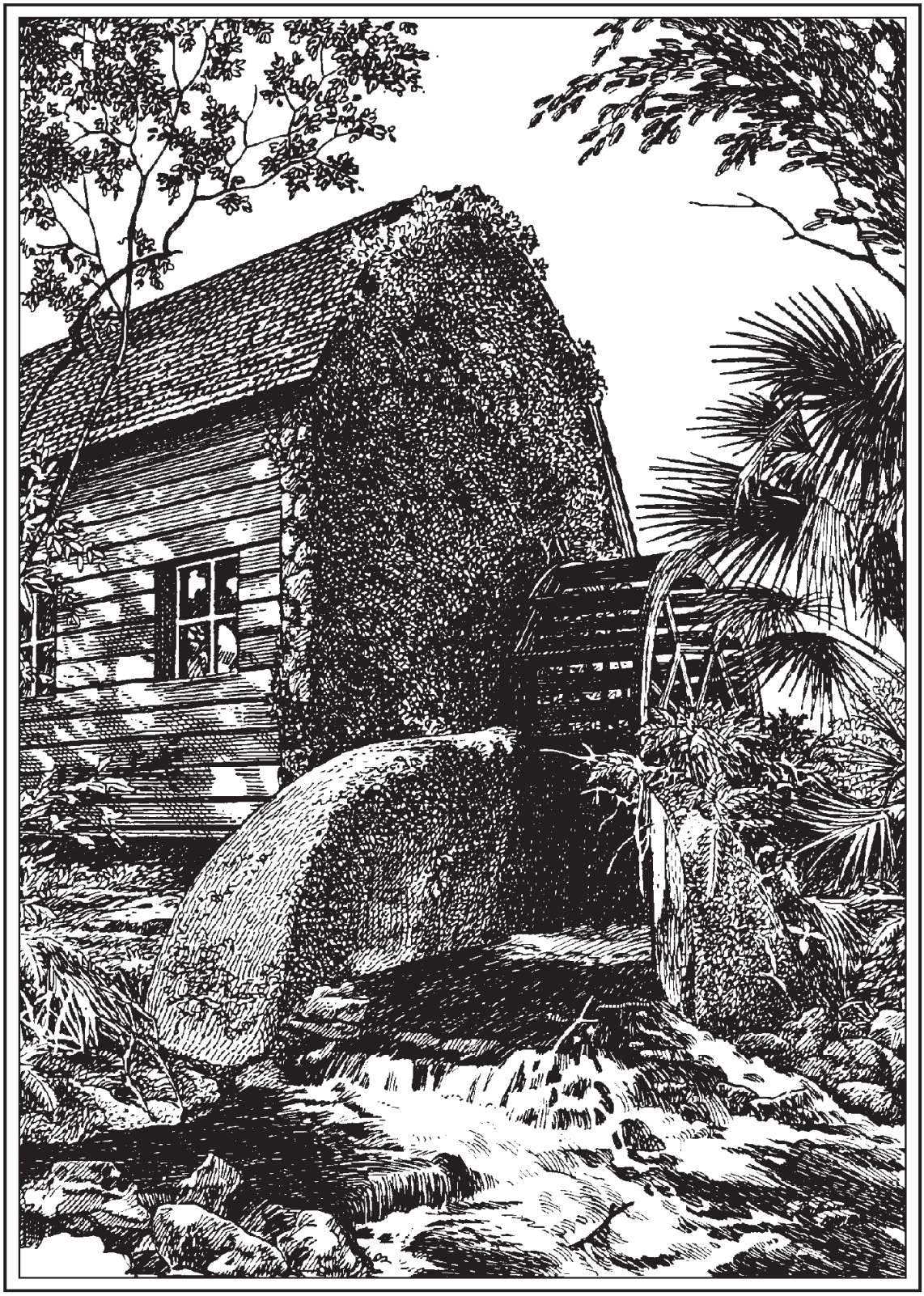


Figure 3.10. Wildlife Habitat Indices.

RESOURCE MANAGEMENT PROGRAMS



Heritage Program

Affected Environment

National Forests in Florida works with the Florida State Historic Preservation Office to ensure archeological sites are not damaged. Archeological sites are places or areas where significant heritage material remains from the original human activity that took place there. Those sites created from human activity prior to European influx are termed *prehistoric* and those afterward *historic*. Many sites contain both prehistoric and historic components. This contributes to the overall significance of the site and identifies the area as having outstanding or unique environmental values that have an intrinsic appeal to humankind.

Historic structures or structures representing unique architectural styles are also important heritage resources. Structures symbolize particular periods in time and stylistically represent the cultural values of the designers and builders. Vernacular and other types of architecture are steadily disappearing through demolition or neglect. Through partnerships and contracts, Historic American Building Survey drawings have been completed for Doe Lake Dining Hall, Langston House, Olustee Garage, and Silver Lake Civilian Conservation Corps (CCC) Picnic Shelter. Other assessments have been made by historic architects before demolishing or removing nonsignificant historic structures.

Another type of heritage resource, which has recently emerged in resource management, is the historic landscape. Although a clearly defined concept of what entails an historic landscape is still being developed, a good example of an historic landscape might be an historic farmstead. The farmstead includes structures on the farm and orientation of associated pastureland, cropland, and gardens. Once the farmstead is no longer used, traces of the previous land use are usually discernible. Principles used when investigating historic landscapes have obvious implications concerning the human role in ecosystem management.

By 1985, a total of 642 heritage resource sites had been recorded on the forests in Florida. Since then, at least an additional 1,031 heritage resource sites have been recorded. The breakdown by forest is:

	Apalachicola NF	Ocala NF	Osceola NF	Total
1995	796	500 (est.)	377	1,673 (est.)
1985	168	377	97	642
# in 10 Years	628	123 (est.)	280	1,031 (est.)

Based on these figures, a forestwide average of 103 heritage resource sites per year is predicted to be recorded until the entire national forest land base is surveyed for heritage resource sites or historic structures. Although heritage resource sites have been inventoried at a steady pace, the significance of most has not been determined.

Environmental Consequences

Heritage resources would be protected under all alternatives. All project areas are surveyed for heritage resources prior to any earth-disturbing activities, and archeological sites are evaluated for significance.

The prescribed fire program would vary little between alternatives and would have little impact to heritage resources. Plowlines associated with burning pose the greatest threat of damage to archeological sites. Prescribed burning could reduce threat of damage by reducing the fuel load, especially in wilderness areas that have not been burned regularly. Reducing fuel loads protects historic structures from the threat of destruction from wildfires. Reducing fuel loads also protects surface artifacts from fire damage from high-intensity fires that occur when fuel loads are high. Prescribed fire also aids in removing vegetative cover and uncovering heritage resources.

In all alternatives, harvesting timber would have the potential to impact heritage resources. Site inventories completed before road building or harvesting reduce potential impacts.

On the Ocala NF, the overall size of the sand pine areas would remain the same for all alternatives. The difference in opening sizes would not significantly affect heritage resources. The scrub has a lower probability for containing archeological sites or historic structures compared to other forest areas, except for isolated areas near existing or relic water sources.

In all alternatives, increases in recreational use—especially in key areas on rivers, sinks, or springs—would require increased archeological inventory and evaluation to locate unknown resources and assess potential impacts to them.

Alternative A. Cross-country travel by motorized vehicles would be allowed, increasing the potential risk of damaging heritage resources. Protecting known heritage resource sites could be more difficult if access is unlimited. User-created trails have the potential to increase damage or destruction of heritage resource sites, directly through ground-disturbance or indirectly through soil erosion. Potential risk for vandalism and looting, often directly related to accessibility, could increase.

Hardwood/cypress timber production along the Apalachicola and Ochlockonee Rivers would have the potential to alter the integrity of significant heritage resource sites. These areas have a high likelihood for containing a large number of sites. It would be costly to evaluate the significance of these to determine potential impacts from timber production. Hardwood and cypress timber production on the Osceola and Ocala NFs would increase the potential of damage to aboriginal archeological sites (which are often located adjacent to water sources) and historic homesteads (which are often located in or near hardwood hammocks).

In this alternative, there are several special interest areas in which permitted practices would be limited because of their unique features. Thus, heritage resources within these areas would have a higher level of protection. A significant aboriginal site, which would

require protection or mitigation depending on the specific locations of recreational developments, is at Silver Glen Springs.
This alternative would have more area open to cattle grazing than any other alternative. Cattle grazing would have the potential to alter the integrity of archeological sites from the associated creation of cattle paths, feeding areas, plowed range strips, and fences.

Alternative B. Motorized vehicles would be required to stay on open, numbered roads or designated trails. This would reduce accidental damage to heritage resources from recreational use, and it could reduce damage or destruction from user-created trails.

There would be more acres of land withdrawn from the timber base and designated as recreation DFCs, including moderate recreation development along the Apalachicola and Ochlockonee Rivers. Increased recreational activities in these areas could threaten the integrity of significant heritage resources at high-use locations. The low recreational development (DFC 4.3) area in this alternative may serve to provide a broader base of possible recreational activities on the forest and reduce overuse in the moderate recreational development (DFC 4.4) areas where more sites are likely to occur. The research natural areas contain several potentially significant archeological sites that would benefit from this area being removed from timber production and recreation.

This alternative would have less cattle grazing than in Alternative A, with less damage to heritage resource sites. The large area of remote wetland (DFC 1.1), research natural areas (DFC 2.1), and special interest areas (DFC 3.1) would afford more protection to heritage resources. Activities that would occur here have less potential impacts to archeological remains than activities in other areas. This would be especially true for special interest areas along Deep Creek and the St. Mary's River, drainage systems that probably contain the highest concentration of significant archeological sites for the entire Osceola NF.

Low-impact activities that typically occur in wilderness with trails (DFC 0.2), wild and scenic rivers (DFC 0.3), research natural areas (DFC 2.1), and special interests areas (DFC 3.1) would have less potential for damaging heritage resources than those of more intensive management activities or use. This would be especially true for the special interest area at Silver Glen Springs.

The diverse patch size structure recommended in this alternative may require more frequent entry into areas for harvest, but roads used already would have been surveyed for heritage resources.

Alternative C. With more land in the suitable timber base and fewer acres of special interest areas, this alternative may not afford as much protection to heritage resources as the other alternatives. Designating an area as special may draw attention to the resources there. Being designated a special interest area could threaten heritage resources by exposure, especially when there are limited security measures such as at the River Sinks Tract on the Apalachicola NF. Hardwood/cypress timber production along the Apalachicola and Ochlockonee Rivers would have effects similar to Alternative A. Designating the Bradwell Tract as suitable for timber production may result in the loss of several historic landscapes.

The absence of the special interest areas on the Osceola NF along Deep Creek and the St. Mary's River would increase the potential for damage or loss to heritage resources in those areas. The greatest potential threat to heritage resources in this alternative would be expansive hardwood and cypress timber production areas. Most of these areas have not been archeologically surveyed. Managing Silver Glen Springs on the Ocala NF as a developed recreation area (DFC 4.5) may increase the potential for damage to the site's archeological record.

Alternative D. This alternative would have large areas of land retained in a semiprimitive state. This may result in fewer heritage resources being destroyed or damaged. Restricted access would increase the risk of looting of cultural artifacts due to these areas being more remote and more difficult for law enforcement to patrol. In this respect, it would have the highest potential for looting and vandalism. It would have more acres of land in special interest areas. Because of the unique features these contain, permitted practices would be limited and resources may receive a higher level of protection.

On the Osceola NF, the entire area surrounding Ocean Pond would be managed for developed recreation emphasis. Heritage resource surveys would be necessary before any development. A significant Seminole occupation site, which would require protection or mitigation depending on the specific location of recreational developments, is located near Ocean Pond. Effects of motorized travel would be similar to Alternative B. A segment of the St. Mary's River would remain a special interest area, which would help protect its heritage resources. The area of Olustee Battlefield would be expanded, extending protection to a larger area; this would allow a moderate level of recreational development (DFC 4.4). A frequent target of looting and vandalism, Olustee Battlefield would benefit from increased protection. However, increased recreational development and use would result in potential impacts to the integrity of the site and increase the amount of mitigative archeological work. The trailless wilderness area in Pinhook Swamp would afford heritage resources located there more protection than Alternative C.

On the Ocala NF, large areas would be designated for low recreational development (DFC 4.3). Heritage resource surveys would be necessary before any development. Increased law enforcement may be necessary to prevent looting and vandalism to sites. Managing Silver Glen Springs as a developed recreation area (DFC 4.5) would have the same effects as Alternative C. Low-impact activities that typically occur in trailless wilderness, on wild and scenic rivers, and in special interests areas would have less potential for damaging heritage resources than those of more intensive management activities or use such as hardwood and cypress production. This alternative proposes the removal of Sweetwater Cabin to a location outside the wilderness. Since its natural setting is a major contributing factor to Sweetwater Cabin's historical significance, this would have an adverse effect on this National Register eligible property.

Alternative E. This alternative would provide for a forest/urban interface DFC (DFC 9.2) on the Apalachicola NF. Much of the forest/urban interface area has not been archeologically surveyed and intensified use could affect sites in this area. Designation

of the Bradwell Tract as a special interest area would provide more protection for its historic landscapes and other heritage resources.

The diverse patch size structure recommended would have effects similar to Alternative B. The diverse patch size structure recommended in this alternative may require more frequent entry into areas for harvest, but roads in use would have been surveyed already for heritage resources.
Hardwood/cypress forests would be unsuitable for timber production. Effects would be similar to Alternative B. Risk of damage to heritage resource sites would decrease since less ground-disturbing activities would be proposed in these areas.

Pinhook Swamp would have a remote wetland designation, with effects similar to Alternative B. A segment of St. Mary's River would remain a special interest area, which would help protect its heritage resources. However, this alternative would designate less area along drainage systems as special interest areas than in Alternatives B and D.

Alternative E contains the same amount of area for cattle grazing as Alternative B. This alternative would discontinue range allotments if they are vacant for 5 consecutive years. This would result in a gradual phaseout of the range program. Cattle grazing would have the potential to alter the integrity of archeological sites from the associated creation of cattle paths, feeding areas, plowed range strips, and fences. These effects would be less apparent than in Alternatives A, B, and C.

Enlarging Ocean Pond Campground would have effects similar to Alternative D. Heritage resource surveys would be necessary before any development. A significant Seminole occupation site, which would require protection or mitigation depending on the specific location of recreational developments, is located near Ocean Pond. Effects of increased recreational development at Olustee Battlefield would be similar to Alternative D. A frequent target of looting and vandalism, Olustee Battlefield would benefit from increased protection. However, increased recreational development and use would result in potential impacts to the integrity of the site and increase the amount of mitigative archeological work.

This alternative would have more moderate and low recreational development than Alternatives A, B, and C. Although this alternative would have less low recreational development areas than Alternative D, recreational developments would be more concentrated in the moderate recreational development areas. Of special concern is the moderate recreational development (DFC 4.4) area along Alexander Springs Creek. This area may contain significant heritage resources that could be damaged or destroyed from activities associated with recreational development or use. Managing Silver Glen Springs as a developed recreation area (DFC 4.5) would increase the potential for damage to the site's archeological record.

Effects from prohibiting cross-country motorized travel would be similar to Alternative B. This would reduce accidental damage to heritage resources from recreational use; and it could reduce damage or destruction from user-created trails. Alternative E would limit motorized vehicles and bicycles to open, numbered roads, and designated trails in

some areas of the forest. This would be more restrictive than Alternatives A and C, and less restrictive than Alternatives B and D. Portions of the forests would be opened to travel by motorized vehicles and bicycles on open, numbered roads, designated trails, and unmarked travelways. In these portions, effects would be similar to Alternative A. User-created, unmarked travelways have the potential to increase damage or destruction of heritage resource sites, directly through ground disturbance or indirectly through soil erosion. Potential risk for vandalism and looting, often directly related to accessibility, could increase.

Infrastructure

Affected Environment

Roads and Bridges

The transportation system necessary to protect, develop, and use resources on the national forests in Florida is essentially in place and complete. A review of the existing transportation system was done in the 1980s. It identified that about 50 percent of the low-volume, dead-end roads used for past logging could be closed and returned to resource production. Road obliteration has been accomplished primarily in post-sale site-preparation operations. The forests have accomplished more than 400 miles of the targets set in the 1986 review.

The current Forest Development Transportation System consists of 279 miles of State highways, 333 miles of county roads, 4,127 miles of forest development roads, and 48 bridges. Of the mileage mentioned above, 520 miles have been designated as forest highways. Only those State highways and county roads needed to manage the national forests are included in this system.

All roads in the transportation system are classified as either arterial, collector, or local.

> *Arterial roads* are the main access routes into, out of, and through national forest land. All arterial roads are State highways and county roads and provide the primary outside access to forest resources.
>
> *Collector roads* are secondary access routes within forest boundaries. These roads include many Forest Service roads as well as State highways and county roads.
>
> *Local roads* provide access to specific areas within forest boundaries and almost always serve a single resource purpose or administrative activity. Local roads are usually Forest Service roads but also include roads that serve county or private special uses.

Of the 4,127 miles of forest development roads, 38 miles are classified as arterial, 509 miles as collectors, and 3,580 miles as local. Most of the arterial and collector roads under State and county jurisdiction serve the forests at a standard that is adequate. About 1,700 miles of forest development roads have been scheduled for closure. From 1986 to 1994, 7 miles of roads were constructed, 427 miles were reconstructed, and 397 miles were closed.

Except for roads used for access to administrative sites and recreation areas, there are very few traffic restrictions or prohibitions used by the national forests. Except for the situations mentioned above, all Forest Service roads are classified as constant service; that is, always open to any user. The geophysical makeup of the terrain allows easy access to the national forests. A dense network of unmarked travelways is found within the forests. The Forest Service does not maintain these travelways.

Road maintenance activities are planned and executed using the maintenance management system outlined in Forest Service policy. Maintenance is performed by the Forest Service using regular budget funding and cooperative user funds. Currently, the Forest Service has cooperative road maintenance agreements with all counties containing national forest lands.

Buildings

The Apalachicola, Ocala, and Osceola NFs manage many administrative facility sites, which include 89 buildings. There are five district ranger offices, five work centers, the Ocala Genetic Resource Management Area, a Fire/Engineering Zone office, five lookout towers, and a Supervisor's Office. There are many recreation facilities associated with developed sites on the Ocala NF.

Of the five district ranger offices, only the Lake George RD office is a Forest Service-owned facility. Two former residences on the Apalachicola RD are used for additional office space and as a bunkhouse. Other former residences on the forests include four small buildings used as dwellings by caretakers at recreation areas and one used for special recreation activities. Most of these facilities are 20-25 years old and in good repair structurally.

Work centers on the Osceola and Ocala NFs are 25-30 years old. Since the average service life of a work center is about 40 years, these work centers will be considered for reconstruction or replacement between fiscal years 2000 and 2010.

The forests have approximately 60 water systems and 70 wastewater systems.

Environmental Consequences

Forest Plan guidance for roads and bridges is limited to those within Forest Service jurisdiction. Activities significantly affecting the transportation system are road and bridge construction, reconstruction, maintenance, and closure.

Road construction would be minimal in all alternatives. Road construction may be needed to provide access for new land acquisitions and to new facilities. Constructing roads consists of providing access where none exists. Factors in the alternatives affecting road construction are land acquisitions, facility construction, range policy, amount of restricted areas, and the timber management policy.

Roads would not be constructed within wilderness areas (DFCs 0.1 and 0.2), wilderness study areas (DFC 0.4), remote wetlands (DFC 1.1), and nonmotorized use areas (DFC

4.1). Construction would be restricted in wild and scenic river corridors (DFC 0.3). Roads constructed within range allotments may have a higher cost due to the need for gates or cattle guards. Table 2.1 shows the percentage of land by alternative (DFCs 6.2 and 7.2) where range allotments are permitted.

Most of the roads were built to provide access for timber production. There may be some areas where new roads are needed. The need for roads related to timber production increases with the amount of land designated suitable for timber production.

Road reconstruction consists of rebuilding an existing road to a specified traffic service level. Reconstruction can include: blading road surfaces, repairing drainage structures, replacing surfacing and reshaping roadways, reshaping ditches, or simply adding borrow material to bring the road back up to natural ground elevations in order to keep the road drainable. Many roads need some form of reconstruction to provide adequate access for timber harvesting. The more timber harvested, the more road reconstruction needed. Uneven-aged silvicultural systems require more road reconstruction than even-aged systems, because areas are entered more frequently under uneven-aged management and more area is traversed per volume harvested in comparison to even-aged systems. Table 3.13 shows the estimated amount of road reconstruction by alternative based on the volume of timber harvested, silvicultural system, and desired future conditions.

Table 3.13

Estimated Road Reconstruction by Alternative
(Miles per 10-Year Period)

	Periods				
Alternative	**1**	**2**	**3**	**4**	**5**
A	324	353	403	378	355
B	305	313	329	332	340
C	367	437	463	453	477
D	226	257	316	338	326
E	406	437	509	538	516

Road maintenance is upkeep of the entire forest transportation system—including travelways, shoulders, parking and side areas, structures, and traffic control devices. The amount of maintenance required depends on the miles of open roads and the amount and type of use on these roads. Alternatives with more acres designated for nonmotorized use would have less road maintenance (*see* Table 2.1).

The timber program by alternative directly affects road maintenance because log-truck use requires more maintenance than passenger-vehicle use. Alternatives with more timber harvest would require more maintenance.

If gross receipts on the forests are reduced, funds to counties earmarked for roads would be reduced. This may adversely affect cooperative road maintenance agreements with counties. The estimated amount of returns to counties by alternative is shown in Table 3.77 in the ``Socioeconomic Environment'' section.

Road closures consist of permanently or periodically closing Forest Service roads to vehicle traffic. Methods may include obliterating the road, blocking traffic with a device, or converting the road to a designated trail. Alternatives vary by the amount of road closure based on the access policy. In all alternatives, major roads needed for through traffic would remain open. Most road closures would be low-standard roads. Specific roads to close are not decided at the Forest Plan level. A site-specific analysis would be conducted prior to closing roads. Figure 3.11 shows the probable disposition of the road system by alternative.

The policy for operating and maintaining buildings and other facilities would be the same in all alternatives. The amount of facilities needed would vary slightly by alternative.

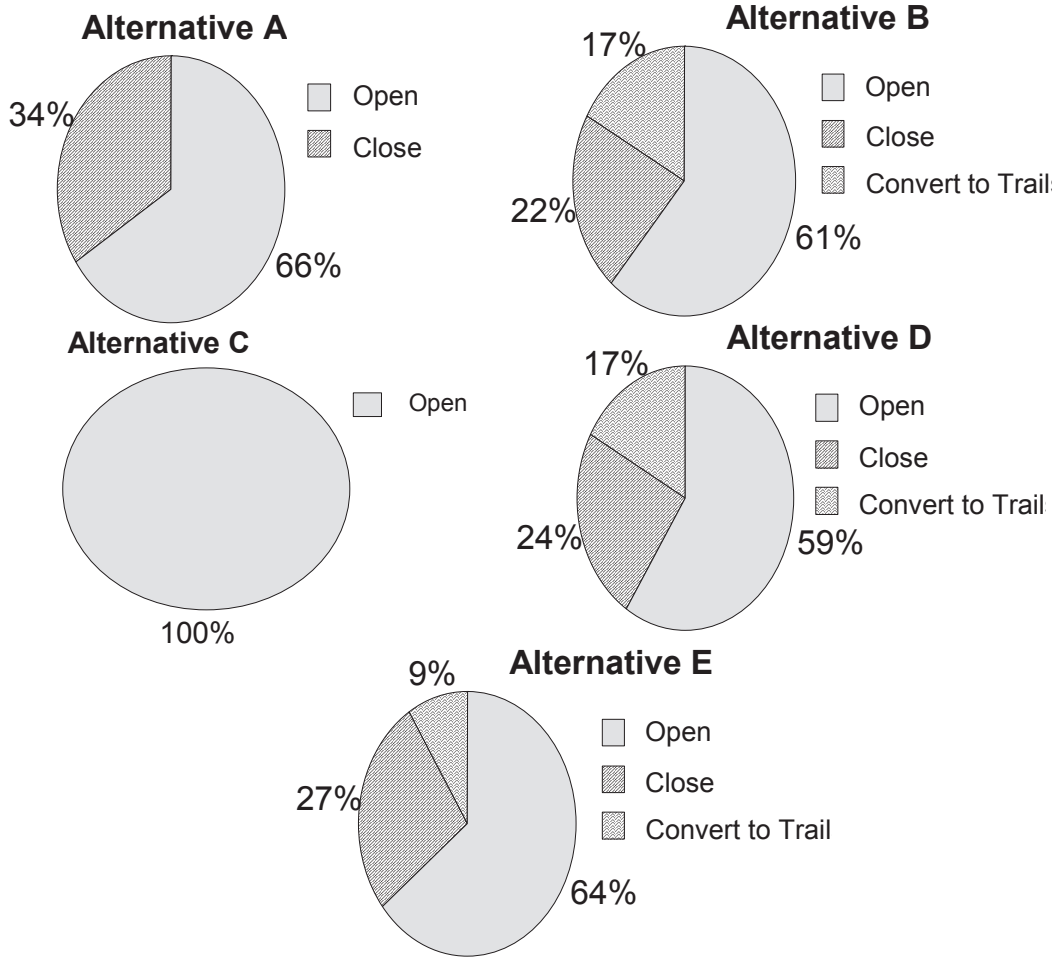


Figure 3.11. Probably Disposition of Current Road System by Alternative.

Alternative A. This alternative would have the most area available for range and the most need for fences, gates, and cattle guards. This alternative ranks second in the amount of open, numbered roads (*see* Figure 3.11). Additional recreational facilities would be needed at Silver Glen Springs on the Ocala NF. Most of the 1,500 miles of roads scheduled for closure would be closed. A small amount of these roads would be converted to trails.

Alternative B. This alternative would have less land available for range compared to Alternative A and less need for fences, gates, or cattle guards. This alternative ranks fourth in the amount of open roads (*see* Figure 3.11). Silver Glen Springs would be a special interest area, and facilities would be geared toward interpretation rather than developed recreation. About half of the roads scheduled for closure would be converted to trails. Some additional roads would be identified for closure.

Alternative C. The same amount of land would be available for range as in Alternative B, with similar effects. This alternative would have the most open, numbered roads of any alternative (*see* Figure 3.11). Facility construction would be similar to Alternative A. None of the roads currently scheduled for closure would be closed.

Alternative D. Grazing would not be permitted. Thus, gates and cattle guards would not be required. This alternative would have the most acreage within restrictive areas, such as wilderness and nonmotorized-use areas. It also would have the lowest potential for road construction or road reconstruction. The increase in the developed recreation area around Ocean Pond and the expansion of the Olustee Battlefield site on the Osceola NF may require additional facilities. About half of the roads scheduled for closure would be converted to trails (*see* Figure 3.11). The remainder of those identified would be closed.

Alternative E. This alternative would have the same acreage available for grazing as Alternatives B and C, with similar effects. However, if an allotment was vacant for 5-year years, it would be discontinued. This would result in a gradual phaseout of the range program; and fences and cattle guards would not be needed. This alternative ranks third in the amount of open roads (*see* Figure 3.11). About a quarter of the roads scheduled for closure would be converted to trails. Facility construction needs would be similar to Alternative B.

Interpretive Services

Affected Environment

The Interpretive Services program seeks to teach forest visitors about the rich natural and heritage resources found on national forests, as well as how the Forest Service manages public land. Interpretive Services on the forests consist of visitor centers; self-guided brochures; interpretive panels at recreation areas, trailheads, and waysides; campground presentations; and bus tours.

Environmental Consequences

The goal of the interpretive program remains the same across all alternatives. Opportunities for interpretation will vary depending on the emphasis of the alternative. Apalachee Savannahs Scenic Byway offers the opportunity to interpret some of the unique ecosystems, plants, and management activities that occur on the Apalachicola NF. The planned expansion of interpretive facilities at the Interstate 10 rest stop and Olustee Depot on the Osceola NF would occur in all alternatives.

Alternative A. This alternative would have less acres allocated as special interest areas. By definition, a special interest area has a unique feature or features that people are interested in and go there specifically to see or learn about. The value of these unique features is closely tied to the educational value people receive through visiting or observing. These areas present opportunities for interpreting these features. Interpretive opportunities would exist both in special interest areas and in other areas of the forests.

Alternative B. The entire savannah area would be designated a research natural area. Part of the Apalachee Savannahs Scenic Byway runs through this area. Designating the area as a research natural area would restrict the construction of interpretive pull-offs. Thus, for the Apalachicola NF, this alternative may limit interpretive opportunities in the savannah area.

Differences in the access policy between alternatives may affect the level of interpretive opportunities by decreasing access into some areas. Alternative B would prohibit cross-country vehicle traffic and reduce the number of roads. A reduction of roads could reduce interpretive opportunities in remote areas. Features identified as special and unique still would be included in the interpretive program.

This alternative would have more land in special interest areas on the Osceola NF, therefore, increasing interpretive opportunities. Alternative B would place a large part of Ancient Island on the Ocala NF in an RNA, which could limit interpretive opportunities.

Alternative C. In this alternative, interpretive opportunities would be similar to Alternative A. These opportunities may be limited by access or by a particular management emphasis for an area. This alternative would have the fewest number of special interest areas and, thus, would offer the fewest opportunities for interpreting unique features.

Alternative D. This alternative would allocate the most land into special interest areas, thereby increasing interpretive opportunities. Having several special interest areas would help the forests determine their priorities and focus interpretive efforts. Adding the Wallace Tract as a special interest area and an intensified prescribed fire program would present many opportunities in the forest/urban interface area near Tallahassee for interpretation.

The increased size of the developed recreation area around Ocean Pond would increase opportunities for interpretation. This is especially true for the Olustee Depot visitor station, an historic preservation project, due to its being close to Ocean Pond. Also, the moderate recreational development expansion at Olustee Battlefield would offer more opportunities for public interpretation.

DFCs would be designated specifically for scrub-jay habitat and Ancient Island. This alternative would increase interpretive opportunities associated with these subjects.

Alternative E. Effects would be similar to Alternative A, regarding special interest areas. The access policy would have effects similar to Alternative B.

This alternative would contain a DFC for forest/urban interface (DFC 9.2). In this area, there would be a strong emphasis on the interactions between humans and the environment. Therefore, more emphasis would be on interpreting the natural world. The moderate recreational development expansion at Olustee Battlefield and the increased area for Ocean Pond would offer more opportunities for public interpretation, similar to Alternative D. This alternative would have DFCs for scrub-jay habitat and Ancient Island similar to Alternative D, with similar effects.

Lands

Affected Environment

Land activities on the forests include:

- administering land purchases, exchanges, transfers, or donations;
- determining the suitability of lands for national forest purposes;
- granting land-use permits;
- acquiring and granting easements;
- locating and maintaining landlines; and
- resolving title claims and occupancy trespass cases.

In Florida, of the 1,275,000 gross acres within the boundaries of the four proclaimed national forests, 1,154,000 acres are in national forest ownership. There are 1,234 miles of property boundary. Consolidation is 88 percent.

Landownership adjustments are made through land purchases, exchanges, title claims, and Small Tract Act cases. Since 1984, *National Forests in Florida* has purchased approximately 38,000 acres, gained more than 5,600 acres by exchange, and acquired 89 easements across private lands. The forest resolves about 15-20 occupancy trespass cases each year and averages about 3-4 title claim cases each year.

During fiscal year 1993, three purchase units were established. The New River purchase unit, adjacent to the Apalachicola NF southern boundary, encompasses 6,860 acres. The Pinhook purchase unit, adjacent to the Osceola NF northern boundary, encompasses about 120,000 acres of non-Federal land. The Watertown purchase unit on the Osceola NF encompasses about 300 acres.

Land uses are activities conducted on national forest land by individuals, corporations, political jurisdictions, etc. Land uses are authorized by special-use permit, easement deed, cooperative agreement, and Memorandum of Understanding. In Florida, of all the uses on the national forests, 40 percent involves agricultural uses, 20 percent involves public roads and utilities and 20 percent involves recreation uses, primarily recreation residences. Table 3.14 shows the status of land-use activities during 1993.

Table 3.14

Status of Land-Use Activities

Kind of Use	Cases	Acres	Miles
Agricultural	443	163	—
Community	5	12	—
Industrial	4	9	—
Public Information	20	385	—
Recreation	292	981	—
Research, Study, and Training	44	1,125*	—
Transportation	195	4,944	295
Utility and Communication	18	410	187
Water	16	58	26
TOTAL	**1,037**	**8,087**	**508**

*An additional 299,176 acres are used for short-period military exercises.

Environmental Consequences

In all alternatives, priorities for land acquisition (not listed in order) would be:

- habitat for federally endangered, threatened, and sensitive species;
- lands associated with riparian ecosystems;
- lands needed for critical ecosystem protection;
- lands needed for watershed improvement;
- lands needed to consolidate national forest ownership.
- lands needed to protect congressionally designated areas;
- lands of value for outdoor recreation;
- unique historical or heritage resource sites; and
- wetlands and old-growth forests.

In all alternatives, lands within the New River and the Pinhook purchase units, plus tracts adjacent to the national forests, would be priorities for acquisition.

Although the forests are well consolidated, there are many private inholdings that, if acquired, would promote more efficient administration. Similarly, disposing of scattered, isolated, and difficult to administer national forest tracts would improve efficiency. Consolidation would have a similar emphasis in all alternatives. As the national forests become more consolidated, the need for easements should be reduced.

Efficient maintenance of landlines would be a priority in all alternatives. Boundary maintenance is often funded by projects, such as timber sales. If timber sales decline, there would be less opportunity to use timber sale funds for boundary location.

Trespass and title claim cases would be similar in all alternatives and would not be expected to increase from past yearly averages.

Land-use permits will become more difficult to obtain in the future as costs are passed on to the permittee because of decreased funding. The amount and types of land-use permits will vary slightly by alternative. The goals and desired future conditions of an area will guide the types of uses permitted. Recreation residence permits on new sites would not be authorized in the future in all alternatives.

The emphasis of the land acquisition and exchange program would differ based on the combination of DFCs by alternative. The goals and DFCs of an area would guide what types of lands should be acquired or exchanged. In all alternatives, the Forest Service would work in partnership with the State of Florida on the Ocklawaha River Restoration Project.

Alternative A. This alternative would follow a trend in acquisition and uses similar to the last 10 years.

Alternative B. This alternative would expand the amount of wild and scenic rivers and wilderness areas. Emphasis may shift to acquisition of lands within river corridors and surrounding wilderness areas. This alternative also would increase areas designated as special interest areas and research natural areas. Emphasis would be on land adjustments for critical ecosystem protection and lands with unique historical values. There would be a slight decrease in opportunities for roads and utilities uses due to the increased acreage in wilderness, wild and scenic rivers, special interest areas, and research natural areas.

Alternative C. This alternative would follow a trend in acquisition and uses similar to Alternative A.

Alternative D. This alternative would have more areas designated for a variety of recreational experiences. The land adjustment program would emphasize lands with outdoor recreation and aesthetic values. It would have the greatest amount of land designated as wilderness areas. Emphasis may shift to acquisition of lands surrounding wilderness areas. Placing more land into wilderness and other areas would remove land from the suitable timber base, reduce potential revenues from timber sales, and reduce returns to the counties. Future land acquisition would be more difficult, if perceived to reduce revenues to the local communities. This alternative would have a decrease in opportunities for road use and utility use from current due to the increased acreage in wilderness, wild and scenic rivers, and nonmotorized recreation areas.

Alternative E. This alternative would have effects similar to Alternative B. This alternative would expand the amount of wild and scenic rivers and wilderness areas. Emphasis may shift to acquisition of lands within river corridors and surrounding wilderness areas. This alternative also would increase areas designated as special interest areas. Emphasis would be on land adjustments for critical ecosystem protection and lands with unique historical values. There would be a slight decrease in opportunities for road use and utility use due to the increased acreage in wilderness, wild and scenic rivers, and special interest areas. A forest/urban interface DFC (DFC 9.2) would be designated on the Apalachicola NF. Emphasis would be on urban uses and coordinating with the surrounding communities. Land acquisition and uses would be tailored for these special needs within this area.

Minerals

Affected Environment

Land in Florida is basically sedimentary in origin with an underlying core of volcanic rocks. Lying above the volcanic rocks is a series of sedimentary rocks made up predominantly of alternating layers of limestone. Above older sedimentary rocks is a series of sediments of a younger age. These sedimentary formations—typically composed of layers of sand, silt, clay, peat, and marl—are responsible for most of Florida's topographic relief.

The forests all share similar geological characteristics. The Osceola and Ocala NFs have the most similarities, while the Apalachicola and Choctawhatchee NFs have more limestone outcrops.

Mineral Resources

Mineral resources in the forests can be divided into locatable, leasable, and salable resources. Locatable minerals are ``hardrock minerals''—such as gold, silver, copper, lead, zinc, titanium (essentially all metallic minerals)—found on public domain status land. In Florida, titanium is the most common hardrock mineral found in the national forests. Leasable minerals include energy minerals—such as oil, gas, coal, geothermal, and other specific minerals such as phosphate, sodium, and potassium—that are found on both public domain and acquired status lands. Hardrock minerals are leasable minerals when they are found on acquired status lands. Salable minerals include common varieties of minerals—such as building stone, clay, gravel, limestone, and sand. They are always salable regardless of the land status where they are found.

The United States Government owns most of the mineral rights (fee ownership) on national forest land in Florida.

Public Domain. There are 147,378 acres of the forests having public domain status. These lands are open to the staking of mining claims under the 1872 Mining Law. Any claims located must be filed with the Bureau of Land Management's Eastern States Office in Springfield, Virginia.

Minerals under Federal Ownership. There are 937,126 acres of acquired status lands within Federal ownership of minerals on the forests. The Bureau of Land Management (BLM) is responsible for leasing minerals under both acquired and public domain status lands.

Privately Owned Minerals. There are 52,292 acres of the forests involved with outstanding and reserved minerals.

Split Estate Federal Mineral Ownership. There are approximately 182,000 acres of federally owned minerals on the Blackwater State Forest and approximately 118,000 acres on the Withlacoochee State Forest. Management of these minerals is addressed in the *Florida Resource Management Plan and Record of Decision.*

Gas and Oil. Four test wells have been drilled near the national forests in Florida within the last 10 years. One well was drilled in Franklin County and three wells were drilled in Okaloosa County. These all proved to be dry holes. Demand for gas and oil leases has dropped in the last few years (Table 3.15), probably due to additional Federal constraints on lessees and the low potential for occurrence on the national forests. There have not been any leases on the forests since 1994.

Uranium. Naturally-occurring radionuclides—such as uranium, thorium, and their decay products—are present throughout the environment. However, phosphate deposits in central Florida contain elevated uranium and decay product levels (30 to 60 times those

found in average soil or rock). It is a constituent throughout deposits from pebble-size phosphate to colloidal phosphate. Central Florida's phosphate matrix contains .01 to .02 percent uranium. North Florida's matrix contains 20 to 25 percent of the amount of uranium found in central Florida. This calculates to approximately .003 to .005 percent uranium for north Florida. Radioactive decay products, at least through radium 226, are in equilibrium with uranium in the phosphate deposits. Since economic phosphate deposits have not been found on national forest lands in Florida, potential of recovering uranium from phosphate deposits is very low.

Table 3.15

Number of Leases and Affected Acres Since 1987 on National Forests in Florida

Fiscal	Gas & Oil Leases				Acreages Under Lease			
Yea	Apalachicola NF	Ocala NF	Osceola NF	Totals	Apalachicola NF	Ocala NF	Osceola NF	Totals
198	94	1	9	104	238,387	352	28,055	266,79
198	44	(	5	49	137,074	0	24,613	161,68
198	23	(	4	27	74,151	0	7,245	81,396
199	13	(	3	16	48,583	0	1,137	49,720
199	13	(	3	16	48,583	0	1,137	49,720
199	3	(	2	5	5,628	0	480	6,108
199	3	(	2	5	5,628	0	480	6,108
199	0	(	0	0	0	0		(

Phosphate. Florida has a total of 344 million metric tons of phosphate reserves and 3.8 billion metric tons of identified phosphate resources. About 340 million metric tons of reserves and 2.5 billion metric tons of identified resources occur in five counties. Four million metric tons of reserves and 1.3 billion metric tons of identified resources occur in the 62 counties. Nine of those counties contain national forest land. Some phosphate occurs under the Ocala NF.

In accordance with the Florida Wilderness Act of 1983, phosphate leases will not be issued in the Osceola NF, unless recommended to Congress by the President. The recommendation would need to be based on (1) a national need for phosphate resulting from a domestic shortage or (2) a national need that outweighs public values of the public lands involved.

Titanium. Some titanium, used in cleaning agents and paints, can be found in the Ocala NF. Some exploration has occurred in the southern section of the Ocala NF during the early 1990s.

Heavy Metals. The Ocala and Osceola NFs have the most potential, and the Apalachicola NF has the least potential, for future exploration or production of heavy metals. In 1993, the sands containing heavy metals (ilmenite, rutile, and zircon) on the Ocala NF were explored. It was determined that under those economic conditions, the deposit was not then profitable to mine. Where these minerals occur on public domain status land, claims may be staked under the 1872 Mining Law.

Peat. Peat has a low heating value (British thermal unit). There are many environmental problems associated with the extraction and use of peat. Areas of peat accumulation on the national forests are confined to small, irregularly shaped swamps and interconnecting waterways at stream headwaters.

Limestone. Crystalline limestone resources of the national forest lands in Florida are of limited interest due to the depth at which they occur. The only exception is the extreme eastern portion of the Apalachicola NF, where geologic maps published by the Florida Bureau of Geology indicate the presence of limestone.

Sand and Clay. Presence of gravel has not been reported on the national forest lands in Florida. Sandy clay has been commonly used as a road-surfacing material on the national forests. A majority of known clay deposits has been exhausted in parts of the forests.

Environmental Consequences

Mineral exploration and development would be permitted in all alternatives. Unless market conditions change, there would not be a change in mineral development from current levels under any alternative.

Regulations governing any specific activity depend on who owns the mineral rights, whether the land involved is public domain or acquired status land, and what kind of mineral or energy resource is involved. The Forest Service regulates the extraction of common mineral materials, such as sand and clay, through the special-use permitting process. Where other mineral or energy resources (e.g.: oil, gas, gold, or titanium) are involved, the Bureau of Land Management plays the major role.

Gas, oil, and other leasable minerals require two decisions prior to the BLM offering them for competitive bid. The first decision is whether the minerals are available for lease. This is referred to as the *availability decision*.

A second decision is whether to lease specified lands, referred to as the *leasing decision*. Due to the low probability of mineral potential and the lack of leasing interest, the availability and leasing decisions will not be made in this *Final Environmental Statement for the Revised Land and Resource Management Plan for National Forests in Florida* (FEIS). If, at a later date, there are expressions of interest in leasing specified lands, further environmental analysis will be conducted.

Table 3.16 shows acres of land currently withdrawn or unavailable. These areas are existing wilderness and wilderness study areas that are legislatively withdrawn or unavailable. Recommended additions to the wilderness system or National Wild and Scenic Rivers System will be guided by the appropriate enabling legislation.

Table 3.16

Acres Unavailable/Withdrawn from Mineral Leasing

Apalachicola NF	Acres

Acquired Land	38,317
Ocala NF	
Public Domain Land	14,281
Acquired Land	13,866
Osceola NF	
Acquired Land	17,773
TOTAL	**84,237**

Road reconstruction and maintenance will have some affect on the use of clay as a road-surfacing material. Alternatives with more road reconstruction would require more clay. More clay borrow pits may be needed in these alternatives. See Table 3.13 for the estimated amount of road reconstruction by alternative.

Alternative A. Mineral exploration and development would continue at current levels. Continued maintenance of roads using sandy clay for road surfacing may result in the depletion of this resource in some areas of the forests.

Alternative B. More land would be placed in areas with goals and desired future conditions that may not be compatible with mineral development. These areas include special interest areas (DFC 3.1), research natural areas (DFC 2.1), and minimum development, nonmotorized areas (DFC 4.1). See Table 2.1 for the percent of land in each DFC by alternative. Emphasis on closing roads may reduce the need for road-surfacing material.

Alternative C. Effects would be similar to Alternative A. Since this alternative would have more open roads, more borrow pits may be needed.

Alternative D. This alternative would have the most land in areas with goals and desired future conditions that may not be compatible with mineral development, such as DFCs 0.1, 0.2, 0.3, 2.1, 3.1, 4.1, 4.2, and 4.3 (*see* Table 2.1). This alternative would have the least potential for mineral development. The road policy would be similar to Alternative B, with similar effects.

Alternative E. Effects of this alternative would be similar to Alternative B. This alternative would have slightly less area in DFCs that may not be compatible with mineral development than Alternative B (*see* Table 2.1).

Protection

Affected Environment

Law Enforcement

The Forest Service is responsible for enforcing Federal laws and regulations on National Forest System lands. To carry out this responsibility, the Forest Service maintains a cadre of well-trained, professional law enforcement officers. They ensure compliance with the law and protection of persons, property, and resources. Crime prevention is given the highest law enforcement emphasis. Firm, fair, and consistent enforcement efforts are the key to the success of the program.

The largest number of violations is due to heavy recreation use (Table 3.17). These violations include nonpayment of fees, parking violations, misuse of trails, traffic violations, and recreation site occupancy violations. Drug use on the national forests, along with marijuana growing, continues to be a common occurrence in law enforcement violations. Cooperative Law Enforcement Agreements exist with all counties in and adjacent to the national forests.

Table 3.17

Law Enforcement Violations

Violation Category	1990	1991	1992	1993	1994
Recreation	1,204	1,352	1,179	1,112	944
Roads and Trails	620	549	594	906	951
Sanitation	298	265	274	331	314
Occupancy	236	152	186	201	104
Property Damage	161	141	94	105	105
Timber	155	131	163	179	125
Property Theft	138	98	88	84	82
Fire	135	134	169	121	128
Wildlife	120	158	188	186	140
Conduct	108	107	108	102	129
Miscellaneous Injuries	89	69	103	106	103
Cannabis	76	66	194	104	35
Encroachments	38	27	16	17	13
Range	11	3	11	5	3
Co-Defendant	0	1	4	1	0
Other	154	87	103	161	139
TOTAL	**3,543**	**3,340**	**3,474**	**3,721**	**3,315**

Environmental Consequences

The access policy of the alternatives would have an affect on the potential for criminal violations—such as garbage dumping, poaching, resource damage, resource theft, and wildland arson—that are facilitated by easier access to remote areas. Resource damage includes—but is not limited to—disturbing heritage resource sites, harming plants and animals, and reducing soil productivity. Alternatives with more restricted areas would have more potential for violations such as cultural resource looting, marijuana growing, and timber theft. These activities occur in remote areas with low public use. Alternatives that create the most recreational use would create the largest demand on law enforcement resources.

In alternatives that permit cross-country travel, the potential for resource damage would be higher and harder to enforce. As prescribed burning is increased, many areas of the forest would become more open and parklike. This condition would permit easier cross-country travel, which could become a law enforcement problem in alternatives where cross-country travel would be prohibited.

Alternative A. Cross-country motorized travel would be permitted. Some roads would be scheduled for closure. The current situation would continue, with high potential for resource-damage violations. This alternative would have the most area allotted for

grazing. This alternative would have the most potential for range-related violations such as cattle rustling.

Alternative B. The access policy would prohibit cross-country motorized travel, would schedule some roads for closure, and would limit motorized vehicles to designated roads and trails. This would be easier to enforce than the current situation which allows cross-country travel.

Alternative C. This alternative would have the least restrictive access policy permitting cross-country motorized travel and would schedule no roads for obliteration. This situation would create the highest potential for criminal violations related to easier access to the forests.

Alternative D. Cross-country motorized travel would not be permitted. Some roads would be scheduled for closure, but there would be a higher density of designated trails. This condition would create less potential for access-related violations than in Alternatives A or C, but more than in Alternatives B. This alternative would have the most combined area in trailless wilderness, minimum development nonmotorized, and minimum development motorized. This condition would create a high potential for marijuana growing, looting, and timber theft. Cattle grazing would be prohibited. This alternative would have the least potential for violations associated with range such as cattle rustling.

Alternative E. This alternative would be similar to Alternative B, except motorized vehicles would be permitted to travel on designated trails and unmarked travelways in some areas. This alternative would have the most detailed access policy that designates areas on each forest where different rules apply. This condition may be more difficult to understand clearly and would be difficult to enforce. Allowing travel on unmarked travelways, but in specific areas, may be difficult to enforce depending on how clearly unmarked travelways are defined.

Affected Environment

Fire

Fire management on the forests includes reaction to wildland fire situations and a prescribed fire program. Prescribed fire may be defined ``as the skillful application of fire to forest fuels under specific weather conditions to achieve resource management objectives."

Wildland Fire

Each wildland fire ignition is managed with the proper suppression response. This may mean any of a full range of actions from confinement of the fire within natural boundaries to full control employing all available resources. At stake is the threat to life and property, PETS species, and other resource values. Decisions are made to provide the suppression alternative that results in the least cost and resource loss. Table 3.18 shows fire intensity levels, occurrence rates, and acres burned on the national forests in Florida. Most wildfires are intensity levels 1, 2, and 3. Occasionally, the forests experience fires

in intensity levels 4, 5, and 6 during extended drought conditions. There has been no set pattern that allows prediction.

In Florida, the national forest wildfire situation varied during 1990-96. Very wet years were 1991, 1994 and 1995; total fires and acres burned were down. Extended drought periods were during 1992 and 1993, and a major fire occurred in each year. The 7-year average for the period 1990-96 is 137 fires per year and 5,234 acres burned per year. During the 7-year period 1990-96, the average fire size was 38 acres. This is up significantly from 10 years ago. There are two main reasons for the large increase. First, the Forest Service no longer tries to suppress all fires under 10 acres. Instead, natural boundaries and roads are often used for barriers, resulting in larger fires, but at less cost and with less resource damage from plowlines. Second, figures for 1990-96 contain one unusually large fire, the Post Office Bay Fire on the Apalachicola NF (7,400 acres). This large fire caused an increase in the average fire size.

Table 3.18

Fire Intensity

Fire Intensity Level	Flame Length*	Days of Year with Intensity Potential	Percent of Total Number of Fires	Percent of Total Acres Burned
1 Low	0-2 Feet	168	22	1
2 Moderate	2-4 Feet	86	31	9
3 High	4-7 Feet	76	30	13
4 High +	7-8 Feet	19	6	8
5 Very High	8-9 Feet	8	9	11
6 Extreme	9+ Feet	8	2	58

*The flame length was considered to be 10 percent of the Burning Index calculated by the National Fire Danger Rating System.

In Florida, extreme burning conditions occur infrequently on the national forests. April, May, June, September, October, and November normally have the worst wildfires. Due to climate and fuel types, wildfires can and do occur during any month of the year. This complicates fire protection activities.

National Forests in Florida and Florida Division of Forestry maintain a cooperative agreement and an annual fire suppression action plan. These two agencies—along with St. Marks National Wildlife Refuge, Merritt Island National Wildlife Refuge, and Okefenokee National Wildlife Refuge—routinely exchange suppression resources as fire situations dictate. *National Forests in Florida* also maintains a cooperative agreement with Eglin Air Force Base (AFB) that allows Eglin to take initial attack action on the isolated tracts of land of the Choctawhatchee NF.

One of the growing challenges facing the Forest Service fire organization is the steady encroachment of homes into the wildland environment. Many tracts of private land within or immediately adjacent to the national forests are being developed into subdivisions. All districts have improved their water-handling capability with additional or better-equipped engines to provide quicker response than the traditional tractor-plow units. Because response time is so critical in this situation, as well as in some high resource value areas, the Forest Service also uses helicopters with water buckets and,

occasionally, fixed-wing air tankers to reduce the initial attack time during periods of high fire danger.

Fires in wilderness must be suppressed with hand tools or aerial water or retardant drops. When life, property, or personnel safety is threatened, the District Ranger may approve the use of engines, pumps, chain saws, or off-highway vehicles (OHVs) in the wilderness. In wilderness study areas, chain saws, OHVs, and portable pumps may be used. However, all engines and other vehicles must remain on existing roads that are open to the public. In both wilderness and wilderness study areas, tractor-plow units may not be used unless approved by the Regional Forester.

Prescribed Fire

Prescribed fire is used for control of brownspot disease, control of understory vegetation, fuel reduction, premarking burns (for timber), range forage improvement, restoration and maintenance of ecosystems, site preparation, threatened and endangered species habitat improvement, visual resource management, and wildlife habitat improvement. Table 3.19 shows prescribed burning accomplishments during 1992-96.

Table 3.19

Prescribed Burning, 1992-96
National Forests in Florida

Type of Burn	1992	1993	1994	1995	1996	Totals	5-Year Average
Rough Reduction	42,422	45,850	54,805	104,167	120,955	368,199	73,640
Wildlife	22,775	21,591	33,841	22,743	22,306	123,256	24,651
Range	13,068	6,605	4,296	4,254	4,595	32,818	6,564
Site Preparation	1,525	2,149	964	1,301	1,098	7,037	1,407
Control Understory	9,688			1,049	3,910	14,647	2,929
Brownspot	692	512	60	295	513	2,072	414
Other		2,376	3,918			6,294	1,259
TOTAL	**90,170**	**79,083**	**97,884**	**133,809**	**153,377**	**554,323**	**110,864**

Land burned under prescription during the last 5 years varied from a low of 79,083 acres in 1993 to a high of 153,377 acres in 1996. The 5-year average for the period is 110,864 acres. An estimated 474,000 acres are burnable on a short-return interval, leading to a 5-year burn cycle of 94,800 acres. This cycle is not adequate to reduce wildfire severity, protect private property, or restore native ecosystems. A 4-year cycle would require the burning of 118,500 acres annually, while a 3-year cycle would require 158,000 acres annually. Forest personnel have determined a 3-year cycle would meet protection and resource management needs.

The prescribed fire program has evolved from an almost entirely winter prescribed burning program 10 years ago to the current year-round burning program. Prescribed burns are initiated during every month of the year. Growing-season burns have had dramatic effects on understory vegetation. In recent years, the Apalachicola RD has burned an average of about 15,000 acres annually during growing-season burning. Although not covering as many acres, the Seminole and Lake George RDs have moved

their programs to 50 percent growing-season burning. The other ranger districts have averaged 20-30 percent accomplishment during growing season, with an increasing trend.

The impact of smoke from prescribed burning has become a major issue for the Forest Service. All prescribed burns are planned using accepted smoke-screening techniques. However, smoke complaints continue to increase as more people move into or adjacent to the national forests.

All seven wilderness areas have been approved for prescribed burning with management ignition. In addition, consistent with the Federal Fire Policy, natural ignitions in the seven wilderness areas will be declared wildland fires. These may be managed within the full range from immediate control to minimal suppression tactics which consider the resource benefits of the wildland fire.

Environmental Consequences

The fire management program would be the same under all alternatives. Wildfires would be suppressed with an appropriate suppression action that may range from limited action and monitoring to full suppression with all available resources. Prescribed burning would be conducted on all acres within short-fire-return-interval ecosystems on a 3-year cycle.

Record of Decision, Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont includes as a mitigation measure that no more than two successive growing-season prescribed burns be conducted without an intervening dormant-season burn. All alternatives would eliminate this mitigating measure. Reasons for this change are documented below.

Florida has more thunderstorm days than any other state in the country. Lightning fires historically have burned Florida ecosystems from April to September. Data over the last century show that acres burned by lightning-caused fires peak in May and June. Most native species are adapted to fire during that time of year.

The Forest Service has gained considerable experience in growing-season burning from 1985 through 1995. During that 10-year period, 50-90 percent of the annual growing-season burning conducted in the Southern Region of the Forest Service occurred on the national forests in Florida. During 1990 and 1991, almost 75 percent of the region's growing-season burning took place on the Apalachicola RD. Personnel on the forests have increased their understanding of the complex relationships in fire-dependent ecosystems and have developed skills and expertise to apply safely prescribed fire during that time of the year.

Growing-season prescribed burning has proven to be critical for recovery of threatened and endangered plant species. Following a May burn on the Apalachicola RD more than 100 Florida skullcap (*Scuteleria floridana*) plants were located in an area where only three plants were noted before the burn. This success is repeated over and over with many sensitive plants. In addition, wiregrass—a cornerstone of the longleaf pine-wiregrass ecosystem—has been shown to flower only when burned from April to July. The success of restoring this key component of the ecosystem depends on continued burning during the growing season.

Mortality from growing-season burns has proven to be low, even with intense burns. The Apalachicola RD has burned about 150,000 acres during the growing season in the last decade, more than all other districts in the region combined. During this period, serious mortality resulted from only one burn. Any growing-season (or dormant-season) burn can lead to small pockets of trees dying, but experience has proven this to be much less of a problem than originally anticipated when the *Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont* was issued.

The intent for the original prohibition on more than two consecutive growing-season burns was tied to loss of growth for timber production. While some reduction in growth may occur, the critical need for growing-season fire for overall ecosystem management greatly outweighs any minor losses in timber growth. The Forest Service will allow growing-season burns in succession based on site-specific analysis.

Land acquisition would increase the total prescribed burning needs on the forests. Acquisition also would increase the total land area on which fire suppression responsibility must be maintained. Consolidating ownership patterns by acquiring inholdings would decrease the cost of prescribed fire by reducing firelines and protection efforts. Consolidation also would reduce the cost of fire suppression, as suppression options can be applied based on resource needs only instead of need to prevent spread to private property.

The size and shape of wildfires also will be impacted by differences in the shape, size, and distribution of sand pine clearcuts under the different DFCs for sand pine management. Recent clearcut areas halt the spread of wildfire in sand pine ecosystems.

Restricting plowed firelines around ponds where flatwoods salamanders breed could increase the cost of some burns due to a need to use alternative measures to prevent fire from entering the ponds during certain months of the year.

Alternative A. The road policy would affect both prescribed fire and wildfire. This alternative ranks second in the amount of open roads (*see* Figure 3.11). More open roads would allow quicker and slightly cheaper prescribed burning due to the availability of roads as fuel breaks and the increased access for burning crews; but providing more access would offer more possibilities for human-caused fires. This alternative would permit cross-country motorized travel.

Timber activities would have a minor effect on the prescribed fire program. The primary silvicultural system would be even-aged management, which would have a more routine and predictable prescribed burning cycle. Due to the tolerance of longleaf pine to fire, moving more toward longleaf pine would result in less expense in protecting very young slash pine plantations from prescribed burning, and less risk of damage from wildfire.

This alternative would provide the most acres for cattle grazing (*see* Table 2.1). Grazing allotments would affect prescribed burning by requiring more coordination within the allotments due to the presence of fences and livestock. Forage production also would be a consideration within the allotments that would affect the season of burn. Occasionally winter prescribed burns would be needed within grazing allotments.

Alternative B. This alternative ranks fourth in the amount of open roads (*see* Figure 3.11). Fewer open roads would increase prescribed burning costs due to extra preparation time needed to mow, disk, or otherwise prepare old roadbeds for use as firebreaks. If these old roads are not improved for firebreaks, the amount of time required to prescribe burn many areas may increase.

Motorized vehicles would be restricted to open, numbered roads, and designated trails. Less access would reduce the possibility for human-caused wildfires.

The longleaf and slash pine forests would move toward a more diverse patch size structure using group selection harvests. Wildfire severity may be reduced due to the need for skid trails over more acres compared to even-aged harvest methods. Skid trails normally slow the spread of fire for 1-3 years after harvest. Prescribed burning costs could increase if skid trails stop the fire, requiring reignition of the burn. Emphasis on group selection harvest would require more coordination in scheduling prescribed burns due to the reliance on natural regeneration and frequent stand harvest entries.

This alternative would allow clearcuts up to 160 acres in sand pine, which would reduce the cost of prescribed burning for site preparation due to economy of scale. Larger clearcuts would offer a bigger obstruction to the fire. However, larger clearcuts would be spaced further apart offering more room for fire to spread before reaching the obstruction.

Clear Lake WSA would be recommended as wilderness. This would result in a slightly higher prescribed burning cost for the area due to the need to use helicopter ignition versus ground-based ignition and aerial monitoring.

The area available for range would be less than in Alternative A. Effects within the range allotments would be similar to Alternative A.

Alternative C. This alternative would have the most open roads (*see* Figure 3.11). Effects would be similar to Alternative A.

The longleaf and slash pine forests would continue to have the current patch size structure. Timber management effects would be similar to Alternative A. Clearcuts within sand pine would have a maximum size of 160 acres, the same as in Alternative B, with similar effects.

The area available for range would be the same as in Alternative B, with similar effects.

Alternative D. This alternative would have an access policy similar to Alternative B, with similar effects. It would have the most area designated for nonmotorized use. Effects would be similar to Alternative B. Areas of each forest would have a patch size structure similar to Alternatives A and B, with similar effects.

Clear Lake and Natural Area WSAs would be recommended for wilderness designation. This alternative would have the most area recommended for wilderness, with effects similar to Alternative B but to a greater extent. Additional special interest areas would result in additional costs for wildfire protection, if fire exclusion is necessary to protect improvements and interpretive displays.

On the Osceola NF, the entire area around Ocean Pond would be designated as DFC 4.5, developed recreation. Additional development around Ocean Pond could increase prescribed burning costs slightly due to increased smoke sensitivity.

On the Ocala NF, DFC 8.4 (scrub-jay management area) would call for special management of scrub-jay habitat in Ancient Island and other areas. This would increase use of prescribed burning in an attempt to remove sand pine and manage oak scrub at less than 15 years of age. These acres would not be counted in a 3-year cycle of burning in short-fire-return-interval ecosystems and would, thus, increase the program by 1,000-2,000 acres per year. This would be a minor change in comparison to the planned program of 158,000 acres annually. The size of clearcuts in sand pine would be the same as in Alternative B, with similar effects. In DFC 8.1 (sand pine, natural regeneration, large openings), clearcuts would be allowed up to 320 acres, which would allow for increased economy of scale and lower burning costs per acre compared to the rest of the sand pine areas.

The number of different DFCs would increase the complexity of the prescribed burning program and the cost compared to the other alternatives.

Alternative E. This alternative ranks third in the amount of open roads (*see* Figure 3.11). Fewer open roads would increase prescribed burning costs due to extra preparation time needed to mow, disk, or otherwise prepare old roadbeds for use as firebreaks. If these old roads are not improved for firebreaks, the amount of time required to prescribe burn many areas may increase.

Motorized vehicles would be restricted to open, numbered roads and designated trails in portions of the forests. In other areas, travel would be allowed on unmarked travelways as well. Areas with less access would reduce the possibility for human-caused wildfires.

The longleaf and slash pine forests would move toward a more diverse patch size structure using group-selection harvests. Wildfire severity may be reduced due to the need for skid trails over more acres compared to even-aged harvest methods. Skid trails normally slow the spread of fire for 1-3 years after harvest. Prescribed burning costs could increase if skid trails stop the fire, requiring reignition of the burn. Emphasis on group selection harvest would require more coordination in scheduling prescribed burns due to the reliance on natural regeneration and frequent stand harvest entries.

This alternative would allow clearcuts up to 160 acres in DFC 8.2 (sand pine, mixed regeneration, moderate openings) and 320 acres in DFC 8.1 (sand pine, natural regeneration, large openings), which would reduce the cost of prescribed burning for site preparation due to economy of scale. Larger clearcuts would offer a bigger obstruction to the fire. However, larger clearcuts would be spaced further apart offering more room for fire to spread before reaching the obstruction.

On the Ocala NF, DFC 8.4 (scrub-jay management area) would call for special management of scrub-jay habitat in Ancient Island and other areas. This would increase use of prescribed burning in an attempt to remove sand pine and manage oak scrub at less than 15 years of age. These acres would not be counted in a 3-year cycle of burning in

short-fire-return-interval ecosystems and would, thus, increase the program by 1,000-2,000 acres per year. This would be a minor change in comparison to the planned program of 158,000 acres annually.

Clear Lake WSA would be recommended as wilderness. This would result in a slightly higher prescribed burning cost for the area due to the need to use helicopter ignition versus ground-based ignition and aerial monitoring.

The area available for range would be the same as in Alternatives B and C. The difference would be that if an allotment was vacant for 5 consecutive years, it would be discontinued. This would result in a gradual phaseout of the range program. Grazing allotments would affect prescribed burning by requiring more coordination within the allotments due to the presence of fences and livestock. Forage production also would be a consideration within the allotments that would affect the season of burn. Occasional winter prescribed burns would be needed within grazing allotments.

Affected Environment

Insects and Diseases

Integrated pest management (IPM) uses techniques of pest prevention and suppression in an ecological context to hold pest population levels below those causing economic injury or adversely impacting other values (*Insects of Eastern Forests*, 1985). Several insects and diseases have the potential to adversely affect vegetative, recreational, or aesthetic resources on the national forests in Florida, though by 1995 widespread catastrophic losses had not occurred.

Southern pine beetle, *Dendroctonous frontalis*, is a particular threat to the loblolly pine stands in several river bottomlands on the national forests in Florida. Loblolly pine becomes especially susceptible if the trees are crowded by lack of timely thinning. About 9,000 acres of loblolly pine stands occur on the national forests in Florida. Weather, predators, diseases, and insect parasites help to suppress southern pine beetle populations. IPM control measures usually include rapid cutting of infested, or soon to be infested, trees, piling and burning of infested trees, cutting and leaving trees, and cutting and chemical control in high-value areas (USDA, June 1989). Control options for the forests are found in the *Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle* (1987).

Ips Engraver beetles/*Ips* spp. and black turpentine beetles/*Dendroctonus terebrans* cause losses to timber but are less serious than the southern pine beetle. Ips beetles often kill clumps of trees where lightning damage occurs. Attacks are usually limited to an area less than 1 acre. Black turpentine beetles attack trees weakened from injuries to roots or the bases of trunks, usually from logging equipment. Ips and black turpentine beetles are frequently associated with root disease. Control measures involve prompt removal of infested trees, and associated logging damage to roots and trunks should be minimized (USDA, June 1989).

Outbreaks of redheaded pine sawfly/*Neodiprion* spp. are cyclical on 8-10 year intervals in Florida. An outbreak defoliated several hundred acres of longleaf pine on the Ocala NF.

Defoliation can reduce tree growth and lower resistance to other pests. Sawflies usually feed on young trees, especially ones stressed by shallow soils, very wet or dry conditions, or competition from other vegetation. Natural predators are encouraged by a closed canopy and by intermingling of hardwood or cypress with pine (Barnard and Dixon, 1983).

The shieldbacked pine seedbug/*Tetyra bipunctata* and the southern pine coneworm/*Dioryctria amatella* are the two most important insect species damaging seed and cones at the Ocala Genetic Resource Management Area. Other pests—such as pinewood nematodes and the leaf-footed pine seedbug/*Leptoglossus corculus*—are present on the orchard and may cause economic injury. An IPM program that includes pheromone trapping, visual inspections, and insecticides is in use.

Imported red fire ants/*Solenopsis invicta* are common in open areas in most types of soil. Insecticides are used to control them in administrative sites and recreation areas.

Africanized honey bees are expected in Florida in the next decade. Feral colonies of European honey bees may be taken over by Africanized queens. These colonies can become hazardous to humans and other animals (Barber, 1994).

Several fungi that are root pathogens—including *Innotus circinatus*, *Phaeolus schweinitzii*, and *Armillariella tabescens*—cause reduced growth and mortality of sand pine on the Ocala NF (Barnard et al., 1985). Many stands more than 45 years of age have high percentages of infected trees. Infection increases with stand age. Sites with poorly drained soils or shallow impervious layers may be especially conducive to root disease.

Fusiform rust, caused by *Cronartium fusiforme*, causes galls and cankers in slash and loblolly pine. These girdle young trees and increase breakage in older trees. Substantial portions of the Osceola and Apalachicola NFs are classified moderate or high hazard for fusiform rust (*see* Hoffard, Marx, and Brown, 1985). In fact, loblolly stands in the river bottomlands on the Apalachicola NF may be at extreme risk. Slash stands anywhere on the Osceola NF may be classified high risk. The Ocala NF is classified as low rust hazard. Planting rust-resistant stock is probably the best prevention (USDA Forestry Bulletin SA-FB/P 24, 1980).

Annosus root rot, caused by *Heterobasidion annosum*, attacks the root system of live trees, causing growth loss and mortality. Slash pine is particularly affected. Longleaf pine is less susceptible. Control methods include stump surface applications of borax or suspensions of the competitive fungus *Phlebia gigantea* and thinning in warm weather when daily temperatures exceed 80 degrees (Rhea, 1994).

Pitch canker, caused by *Fusarium moniliform* var. *subglutinans*, is most prevalent in younger slash pine plantations on the Apalachicola NF. The disease causes crown dieback, stem deformity, reduced-growth rate, and occasionally mortality. The deodar weevil can carry pitch canker fungus into its feeding wounds. Control is done by removing infected trees, burning logging debris and slash, reducing stress in young stands, and planting resistant species (USDA Forestry Report SA-FR 11, 1980).

Brownspot needle blight, caused by *Scirrhia acicola*, attacks needles of longleaf pine seedlings, causing delayed height growth and some mortality. Control is done by prescribed burning infected stands to reduce inoculation on infected needles.

Environmental Consequences

All alternatives propose older longleaf and slash pine forests. This could lead to increased incidences of diseases and insects that favor older forests (such as root diseases, stem decay, and some bark beetles) and a decrease in those that favor young forests (such as brownspot needle blight, pitch canker, fusiform rust, and pine sawflies). All alternatives also include more prescribed burning, with emphasis on growing-season burning. This would decrease the incidence of brownspot needle blight in longleaf pine seedlings since fire reduces inoculum by destroying infected needles. Fusiform rust may have lower incidence because young trees growing in plantations are more susceptible to rust infection and more prone to rust-induced mortality. These forests would cover a smaller percentage of the land area in alternatives dominated by older age classes. In the short run, prescribed burning could increase southern pine beetles, Ips beetles, and pitch canker—especially in slash pine by stressing them and making them more susceptible to attack. However, all alternatives propose replacing off-site slash pine with the appropriate natural species, usually longleaf pine, a species less susceptible to these pests. In the long run, their effects would be reduced.

Alternative A. This alternative would have a high percentage of the forest as suitable for timber production—including wetland forests, sand pine scrub, and longleaf and slash pine forests. On these acres, timber value would be a high priority; therefore, insect and disease outbreaks would be quickly controlled. Sand pine would be managed on a strict 50-year rotation. This practice would keep the incidence of root rot low, since root rot primarily affects trees older than 50 years. Longleaf and slash pine would be managed primarily with 25-40 acre patches of regeneration inside RCW HMAs and 80 acres outside RCW HMAs. This patch structure would increase the impact of insect and disease outbreaks, because it would provide a large, concentrated source of food for the pest. Pests, such as southern pine beetles or sawflies, could quickly rise to large numbers in the densely planted pine plantations. In this alternative, heavy equipment would enter stands less frequently than in alternatives with smaller average patch sizes. Pests, such as turpentine beetles and annosus root rot, would find fewer opportunities to infect in alternatives with less stand entries.

Alternative B. Wetland forests would be unsuitable for timber production. On these acres, insect and disease outbreaks would be controlled only to prevent their spread onto acres suitable for timber production. Wetland forests would experience a more natural, rather than a suppressed, level of outbreaks. Sand pine also would experience more disease, because Alternative B proposes that about 5 percent of these suitable timber acres be allowed to age beyond 50 years (i.e., to become old growth) before it is cut. These acres would have a higher incidence of root rot. In longleaf and slash pine forests, the primary regeneration harvest would be group selection in the first few periods, so single-age patches of trees would be from ¼ to 2 acres. This structure would tend to impede the spread of insect or disease outbreaks, because trees of the same age would be

scattered and stands with trees of all ages would harbor predators that check insects, such as southern pine beetle and sawfly. On the negative side, timber harvests would be more frequent, increasing the risk of equipment injuring the residual stand trees. Such injuries make trees susceptible to turpentine beetles and annosus root rot.

Alternative C. This alternative, like Alternative A, would assign wetland forests as suitable for timber production. Insect and disease outbreaks would be suppressed aggressively in sand pine, longleaf pine, and slash pine. Five percent of the sand pine would age beyond 50 years before harvesting; that is, become old growth. Therefore, the incidence of root rot would be higher than in alternatives that call for a strict 50-year rotation. In longleaf and slash pine areas, the current patch size structure would continue, with effects the same as in Alternative A.

Alternative D. This alternative would have the fewest acres as suitable for timber production. It would have the most acres on which insect and disease outbreaks would be left to run a natural course, except when they threaten adjacent timber acres. In the sand pine, there would be a strict 50-year rotation on most of the timber-producing acres. The incidence of root rot would be lower than in the alternatives that call for some old-growth acres. Longleaf and slash pine areas would have patch size similar to Alternative A, with similar effects. Other areas would have patch sizes similar to Alternative B, with similar effects.

Alternative E. With respect to its effect on insect and disease outbreaks, this alternative is similar to Alternative B. Wetland forests would be unsuitable for timber production. On these acres, insect and disease outbreaks would be controlled only to prevent their spread onto acres suitable for timber production. Wetland forests would experience a more natural, rather than a suppressed, level of outbreaks. Sand pine also would experience more disease, because Alternative E proposes that about 5 percent of these suitable timber acres be allowed to age beyond 50 years (i.e., to become old growth) before it is cut. These acres would have a higher incidence of root rot. In longleaf and slash pine forests, the primary regeneration harvest would be group selection in the first few periods, so single-age patches of trees would be from ¼ to 2 acres. This structure would tend to impede the spread of insect or disease outbreaks, because trees of the same age would be scattered and stands with trees of all ages would harbor predators that check insects, such as southern pine beetle and sawfly. On the negative side, timber harvests would be more frequent, increasing the risk of equipment injuring the residual stand trees. Such injuries make trees susceptible to turpentine beetles and annosus root rot.

Range

Affected Environment

In the first half of the twentieth century, national forest lands in Florida were open range and were grazed widely. Permits were required starting in 1967 and were issued for 1,152 cattle. Twelve allotments (147,898 acres) were fenced on the Osceola NF and four (44,820 acres) on the Apalachicola NF. These 16 allotments remain open as of 1996 (Table 3.20), but only the four on the Apalachicola NF are active, grazing about 300

cattle. Table 3.21 shows the cattle grazed from 1986-96. Grazing has declined from 2,412 cattle in 1986 to 336 in 1996.

Range allotments are located in areas dominated by longleaf or slash pine, with wetlands such as savannahs or cypress swamps. Acres suitable for grazing include pinelands and savannahs, but not swamps. Grasses on suitable acres include wiregrass, dropseed, bluestem, indiangrass, and panic grass. Herbs and shrubs include asters, blueberry, bracken fern, deer tongue, gallberry, goldenrod, lespedeza, runner oak, saw palmetto, tephrosia, tickclover, and wax myrtle. Forage on the forests is not high quality, making feed supplements necessary. Parts of active range allotments are prescribe burned every winter to provide cattle with fresh-growth forage.

A grazing demand study was conducted for the Analysis of the Management Situation, which concluded that it is highly unlikely that the demand for grazing permits will increase during the next 10 years. It is probable that any additional demands would occur on more productive range in Western states. The productivity of woodland forage limits the desirability and the economic feasibility of grazing on the national forests in Florida. The national Resources Planning Act (RPA) assessment projects a decrease in permitted livestock grazing through the next 10 years as part of a shifting of priorities that emphasize restoration of ecosystems.

Table 3.20

Current Range Allotments

National Forest	Allotment	Total Acres	Suitable Acres	Est. Carrying Capacity AUMs*	Head-Months Permitted
Apalachicola	Briar Patch	4,541	4,226	1,593	804
Apalachicola	Deer Hunt	14,250	8,541	5,633	2,400
Apalachicola	Gregory Mill	9,140	6,930	3,995	600
Apalachicola	West Prong	16,889	9,699	3,995	2,400
Osceola	Big Gum Swamp	47,354	27,539	10,565	9,996
Osceola	Bill Branch	15,453	10,260	3,557	2,663
Osceola	Cattail Bay	6,771	5,141	2,204	1,332
Osceola	Cowhouse Bay	8,372	5,694	2,383	1,997
Osceola	Fanny Bay	19,124	13,628	5,554	5,326
Osceola	Little Frog	1,973	1,570	400	400
Osceola	Mt. Carrie/Falling Creek	14,718	12,079	6,997	4,666
Osceola	Olustee Tower	7,196	5,690	2,094	2,094
Osceola	Otter Bay	10,139	7,621	3,212	1,332
Osceola	Triangle	1,342	1,053	333	333
Osceola	Watertown	3,149	2,663	1,332	1,332
Osceola	West Tower	12,307	9,894	5,624	3,995
TOTAL		**192,718**	**132,228**	**59,471**	**41,670**

*animal unit months

Table 3.21

Cattle Grazed, 1986-96

Year	Apalachicola NF	Ocala NF	Osceola NF	Total
1986	497	0	1,915	2,412
1987	497	0	1,900	2,397

1988	514	0	1,525	2,039
1989	627	0	1,153	1,780
1990	627	0	975	1,602
1991	627	0	864	1,491
1992	627	0	1,115	1,742
1993	600	0	775	1,375
1994	538	0	0	538
1995	387	0	0	387
1996	336	0	0	336

Environmental Consequences

All alternatives share two silvicultural features that would affect the quality of cattle forage on the national forests. First, all alternatives propose growing longleaf and slash pine forests to older ages before harvesting. Openings created by timber regeneration harvest provide better forage for the first decade after harvest, so less frequent regeneration harvest would mean fewer openings with better forage. Thinning would occur in all alternatives, which would provide for better forage production. Group selection harvests also would increase forage levels due to openings created in timber stands. Second, all alternatives propose to prescribe burn longleaf and slash pine acres on a 3-year cycle. Prescribed burning improves forage by reducing shrubs and increasing grasses and herbs. The positive effect of prescribed burning involves many more acres during longer periods, so forage would improve on average in all alternatives.

The alternatives are also similar to the level of recreation (hunting, fishing, hiking, etc.) inside range allotments. Recreation use in range allotments may result in gates being left open. Cattle rustling is a low, but a constant, threat. All alternatives propose the same level of law enforcement in range allotments.

Alternative A. The existing 16 range allotments would continue—12 on the Osceola NF and 4 on the Apalachicola NF. The total head-months permitted would be 41,670. The access policy would allow motorized vehicles to travel cross-country and on any unmarked travelway. The resulting mechanical damage to vegetation could have either a negative or positive effect, depending on whether it kills back forage plants or plants competing with forage plants. The unrestricted nature of the access would make enforcement of laws protecting cattle and the range resource more difficult.

Alternative B. The 4 range allotments would be maintained on the Apalachicola NF. Four of the 12 allotments would be kept on the Osceola NF (Bill Branch, Triangle, Fanny Bay, and Cattail Bay). The total head-months permitted would be 15,858. The access policy would restrict motorized vehicles to open, numbered roads or designated trails, so their impacts would have very little effect on cattle forage. Enforcement of laws protecting cattle and resources would be easier with more restricted access.

Alternative C. The same allotments would be maintained as in Alternative B, with the same effects, except access policy. Access policy would be the same as in Alternative A, with the same effects.

Alternative D. The range program would be cut entirely, so other activities would have no affect on range.

Alternative E. The same allotments would be maintained as in Alternative B with similar effects. The total head-months permitted would be 15,858. However, if an allotment was vacant for 5 consecutive years, it would be discontinued. This would result in a gradual phaseout of the range program should the demand decline. The access policy would allow motorized vehicles to travel on any unmarked travelway in portions of the forests. The resulting mechanical damage to vegetation could have either a negative or positive effect, depending on whether it kills back forage plants or plants competing with forage plants. The less restricted nature of the access would make it more difficult to enforcement laws protecting cattle and the range resource.

Recreation

Affected Environment

National forests account for about 12.3 percent of the outdoor recreation acreage available in the State of Florida. The Apalachicola, Ocala, and Osceola NFs provide a variety of recreation experiences and opportunities for the public. Forest-based recreation activities fall into two primary categories—dispersed and developed. Dispersed recreation activities provide primitive settings that offer challenge and low levels of social interaction. Developed recreation activities provide convenience and opportunities for high levels of social interaction.

Recreation-use levels are reported in recreation visitor-days (RVDs), taken from annual Recreation Information Management (RIM) reports. In Florida, the 1996 recreation use on national forests was 2,959,200 RVDs. This figure is close to the average for recent years, and the forests usually experience about a 2-percent increase in RVDs each year. However, significant changes have occurred in recreational activities. While some recreational activities—such as bicycle riding and visiting archeological and historical sites— have risen, other activities such as hunting have leveled off. Still other activities, such as camping, have merely taken on new characteristics. The desire to enjoy the comfort and conveniences of home has caused a shift from tent camping to recreational vehicle/trailer camping.

The demand for outdoor recreation was examined by analyzing the information contained in *Florida's Statewide Comprehensive Outdoor Recreation Plan* (SCORP), 1994. Included in SCORP is participation data collected by the University of Florida's Department of Recreation, Parks and Tourism. Surveys conducted in 1992-93 estimated participation rates for various outdoor recreation activities and where those activities occurred. Data were expressed in terms of a standard unit, a user-occasion. The participation rates, which included both residents and tourists, were then applied to regional population estimates to calculate demand for each of Florida's 11 planning regions and for the state as a whole (for methodology, *see* ``Analysis of the Management Situation for the National Forests in Florida," 1995). Total projected user-occasions increased by 7.3 percent between 1992 and 1995, and increased by 11 percent from 1995 to 2000.

Nationwide, the 1995 Draft RPA Program projects an increase in recreation use of 64 percent from 1993 through 2045. With a projected population increase of .5 percent per year, the public and private sectors most likely will be able to meet projected increases in use. However, the Draft 1995 RPA Program notes that demographics show the American population to be increasingly diverse. On a local level, changing age structure, ethnicity percentages, or urban populations will affect participation rates.

Census estimates indicate Florida's population will increase 16 percent between 1992 and 2000. Florida's SCORP contains predicted increases in demand for several outdoor recreation activities, many of them closely related to the predicted increase in population. For example, SCORP predicts an increase of 16 percent for recreation vehicle camping. Visiting archeological sites also has a strong rate of predicted increase of 15 percent.

Some activities indicated that participation in that activity is increasing and will continue to increase, such as nature study (11% increase in participation), hiking (13.2%), horseback riding (10.5%), and picnicking (12%). Participation in other activities, while still increasing due to population increases, is leveling off or increasing at a slower rate: bicycle riding (12% increase predicted), canoeing (12%), hunting (8.5%), and tent camping (12.7%).

The Recreation Opportunity Spectrum (ROS) is a planning tool used to divide outdoor recreation settings, activities, and experience opportunities into six categories: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban. Opportunities range from a very high chance of solitude, self-reliance, challenge, and risk to a highly social interactive experience.

The most important factor in determining the category and amount of each ROS setting is location and density of roads. Fewer roads result in experiences that are considered more remote and have less evidence of human-caused impact. Because of the large amount of roaded access into the forests, most experiences and settings are in the less primitive portion of ROS.

Statewide, national forests provide a significant amount of areas that retain the more primitive ROS settings, which are being diminished elsewhere throughout Florida.

Environmental Consequences

The percentage of ROS settings varies by alternative according to the emphasis placed on the various resources. A breakdown by percentage of ROS settings assigned to each alternative is shown in Table 3.22. Table 3.23 shows the RVDs and the wildlife and fish user-days (WFUDs) by alternative. Hunting and fishing are included in the RVDs. Hunting use is displayed separately by WFUD. Hunting use is based on big and small game population indexes modeled by alternative.

Table 3.22

Percentage of Recreation Opportunity Spectrum Settings by Alternative

	Alternatives				
	A	B	C	D	E
Apalachicola NF					
Primitive	5.70	6.65	5.68	6.65	6.65
Semiprimitive Nonmotorized	9.80	9.12	9.07	10.51	8.90
Semiprimitive Motorized	16.68	18.54	16.87	23.32	16.93
Roaded Natural	66.64	65.57	67.89	59.40	67.41
Rural	.13	.13	.13	.13	.13
Not Assigned	1.05	.00	.37	.00	.00
Ocala NF					
Primitive	7.41	7.41	7.41	7.73	7.50
Semiprimitive Nonmotorized	3.41	6.17	5.63	3.22	3.94
Semiprimitive Motorized	19.63	22.76	20.70	22.31	20.63
Roaded Natural	67.69	61.84	64.40	64.88	66.06
Rural	.36	.33	.36	.36	.37
Not Assigned	1.51	1.51	1.51	1.51	1.51
Osceola NF					
Primitive	7.19	7.19	7.19	18.34	7.19
Semiprimitive Nonmotorized	10.43	14.05	7.95	12.31	13.07

	Alternatives				
	A	B	C	D	E
Semiprimitive Motorized	14.00	18.77	18.13	11.34	19.27
Roaded Natural	58.01	58.49	65.23	54.81	58.87
Rural	1.50	1.50	1.50	3.20	1.60
Not Assigned	8.87	.00	.00	.00	.00

Table 3.23

Recreation Outputs

Recreation Visitor-Days by Alternative (MMRVDs)					
Alternative	Period 1	Period 2	Period 3	Period 4	Period 5
A	31.3	32.8	34.1	34.2	34.3
B	31.5	32.9	34.5	34.5	34.5
C	31.3	32.9	34.3	34.4	34.4
D	32.3	33.9	35.3	35.4	35.5
E	31.6	33.1	34.3	34.3	34.4
Wildlife and Fish User-Days by Alternative (MMWFUDs)					
Alternative	Period 1	Period 2	Period 3	Period 4	Period 5
A	2.8	2.9	2.8	2.9	2.9
B	2.8	2.9	2.9	2.9	2.9
C	2.8	3.0	3.0	3.0	3.0
D	2.7	2.8	2.8	2.8	2.9
E	2.9	3.0	2.8	2.8	2.8

MMRVDs - million recreation visitor-days
MMWFUDs - million wildlife and fish user-days

Alternative A. Primitive settings would remain unchanged since wilderness study areas on the Apalachicola and Osceola NFs would be retained in their current status. Timber production in hardwood and cypress areas, and in longleaf/slash pine ecosystems, would show the evidence of human-caused disturbance. This alternative would continue the current amount of roaded-natural and semiprimitive-motorized settings. Closing some roads would increase semiprimitive-nonmotorized settings.

Alternative B. Primitive settings would increase due to Clear Lake WSA being recommended as wilderness. No timber production in hardwood and cypress areas would result in a more natural-appearing forest, while increasing semiprimitive motorized and nonmotorized settings. This same effect would occur on the Osceola NF, where Pinhook Swamp would be a remote wetland.

Protection of river corridors and floodplains in recreation DFCs, which are unsuitable for timber production, would emphasize semiprimitive-motorized settings within river corridors. An increase in acreage of special interest areas would protect unaltered landscapes, maintain semiprimitive-motorized settings, and preserve semiprimitive-nonmotorized settings. Closing some roads or converting them to trails would increase semiprimitive motorized and nonmotorized settings.

Alternative C. The amount of primitive settings, associated with existing wilderness, would remain unchanged. Both wilderness study areas would be reassigned to other DFCs and would not be recommended as wilderness; this would result in a loss of

potential primitive and semiprimitive nonmotorized settings. Timber production in hardwood and cypress areas, and in longleaf/slash pine ecosystems, would result in human-caused disturbance and would continue the amount of roaded-natural and semiprimitive-motorized settings. No roads would be closed, which would contribute to a less natural-appearing forest environment and maintain motorized settings.

Alternative D. This alternative would provide the largest amount of primitive settings. Clear Lake WSA, Natural Area WSA, and Pinhook Swamp would be recommended as wilderness.

River bottomlands and floodplains would be in recreation DFCs and would be unsuitable for timber production. This would have effects similar to Alternative B. Expansion of special interest areas would protect unaltered landscapes, maintain semiprimitive-motorized settings, and preserve semiprimitive-nonmotorized settings.

Developed recreation on the Osceola NF would be expanded around Ocean Pond. This would result in an increase in rural settings and a decrease in roaded-natural and semiprimitive-motorized settings. The expansion of Olustee Battlefield also would increase the amount of rural and roaded-natural settings.

Prohibiting cross-country motorized travel and closing some roads or converting them to trails would have effects similar to Alternative B. The amount of designated motorized-use trails would be highest in this alternative. Since these trails would occur on existing old roads, the amount of semiprimitive-motorized settings would be increased and roaded-natural settings would be decreased as these old roads are converted to motorized-use trails.

Alternative E. Primitive settings would increase slightly due to Clear Lake WSA being recommended for wilderness status. Hardwood and cypress would be unsuitable for timber production, with effects similar to Alternative B. Roaded-natural settings would be reduced and semiprimitive-motorized settings would be increased. These effects would also occur on the Osceola NF, where Pinhook Swamp would be a remote wetland.

Prohibiting cross-country motorized travel and closing some roads or converting them to trails would have effects similar to Alternative B. The number of designated motorized-use and nonmotorized-use trails would increase, emphasizing semiprimitive settings over roaded-natural settings in areas accessed by these trails. On the Apalachicola NF, the urban interface areas, the area surrounding the savannahs, and areas along the Ochlockonee River, motorized vehicles and bicycles would be restricted to existing roads and designated trails, resulting in less damage to the soil and vegetation, fewer user conflicts, and varied trail opportunities.

Affected Environment

Dispersed Recreation

Dispersed use on the national forests consists of recreational activities that usually require large areas of land or some level of isolation and quiet. Primary activities are canoeing, fishing, hiking, hunting, nature studying, primitive camping, visiting interpretive and

heritage resource sites, and bicycle, horseback, and trail bike riding. Most of the primitive-type camping occurs in hunt camps during hunting season and along the FNST.

There are 422 miles of nonmotorized-use trails with which to explore the forests. There are also 195 miles of walking trails and loop trails. Equestrians have more than 215 miles of trails to explore. Bicycle riders have 32 miles of challenging single track trails designed especially for their riding pleasure.
There is a high level of off-highway vehicle use on the forests, particularly on the Ocala NF. Bicycles, motorcycles, four-wheelers, and four-wheel-drive vehicles use an existing network of roads, old logging roads, and two-track travelways. There is no designated system of motorized-use trails. Cross-country travel by OHV is currently allowed.

Dispersed recreation in sand pine scrub is predominately motorized recreation—such as driving for pleasure, OHV use, motorbikes, bicycle riding, horseback riding, and hunting. In these activities, the user covers a large area in a relatively short amount of time; these activities require a large land base. Comparatively little hiking, primitive camping, or nature study occur here, due to the large size of openings and lack of shade along trails and roads.

The sandy soils of the area are more resistant to erosion from recreational activities than the more sensitive soils of longleaf and slash pine areas. Trails in the sand pine scrub, whether for motorized or nonmotorized use, tend to be more open and unshaded; and they have longer sight distances which make them safer for motorized OHV use, as well as more enjoyable. The extensive network of roads, trails, and unmarked travelways provides a variety of roaded-natural settings. With the exception of Farles Prairie, there are few opportunities for semiprimitive experiences in the sand pine scrub.

Environmental Consequences

All alternatives would have a similar prescribed fire program. Prescribed fire may affect dispersed recreation users by increasing smoke, decreasing visibility, and blackening vegetation. These impacts are temporary and of short duration. Visitors are beginning to accept the role that fire plays in the natural ecosystem, and many do not think burning is negative. Fire maintains an open, parklike setting that may increase dispersed recreation by removing the dense and impenetrable understory, creating an inviting forest setting. Growing-season burns, especially in savannah or prairie areas, stimulate flower production and create an attractive landscape.

Apalachee Savannahs Scenic Byway exists on the Apalachicola NF. This byway increases opportunities for pleasure driving, nature study, and interpretation of the natural world. Alternative B for the Apalachicola NF would designate a large section of savannahs as a research natural area. Designating the area as a research natural area would discourage interpretive facilities. The other alternatives have the savannahs as special interest areas, and this would increase opportunities for interpretation.

All alternatives would allow for a wide range of trail opportunities and future expansion of trails. They also would provide designated wilderness, providing challenging primitive recreation experiences. For those areas within RCW HMAs, RCW EIS guidelines would

have mostly positive effects on trails. The size of openings and types of regeneration would result in a more natural-appearing forest. Motorized use of trails may be restricted near cavity trees during nesting season. On the Ocala NF, all alternatives would allow clearcuts for sand pine regeneration, although size of openings and regeneration methods may vary. In all alternatives, the Ocala Genetic Resource Management Area (DFC 2.3) would be closed to trail use and dispersed recreation.

If the restoration of Lake Ocklawaha occurs, there may be a need for new recreation site development to provide public access to the river channel. This could occur in all alternatives.

Alternative A. A major difference between alternatives and their effects on dispersed recreation is the access policy. This alternative, with an extensive existing road system and cross-country travel allowed, would maintain the existing level of dispersed recreation by permitting access to most areas of the forests.

Motorized vehicles—such as four-wheel-drive vehicles and motorcycles—would travel through the forests using the network of forest roads, old logging roads, and travelways. While this allows users a sense of freedom, it results in a network of user-created travelways and trails, as well as conflicts between users such as those between horseback riders and motorcyclists, and hikers and hunters. User-created trails are not designed to meet specific types of use and are not maintained or marked. Although user-created trails and travelways contribute to a feeling of exploration, these unmarked trails may result in many hours of frustration to those who get lost. Under this alternative, there is no formal system of trails marked and designated for motorized use.

Chances of viewing wildlife may increase under an open-access policy by increasing the frequency with which wildlife may be encountered, as well as broader access for hunting. Except for wilderness and other designated areas, few opportunities exist for nonmotorized-semiprimitive recreation.

Few acres would be allocated to semiprimitive recreation DFCs. The two wilderness study areas would continue to provide semiprimitive recreation. On the Osceola NF, Impassable Bay would be designated as minimum development, motorized (DFC 4.2). Several areas currently are designated as special interest areas, and some of these are nonmotorized. No wilderness areas would be designated as trailless, although trailless experiences would be available in remote parts of existing wildernesses.

Hardwood and cypress would be suitable for timber production. Evidence of human influence—such as cattle grazing, clearcuts, pine plantations, prescribed burning, and timber harvesting activities—would be seen by dispersed recreationists. Viewing these activities may allow visitors the opportunity to learn more about forest management. Certain activities—such as prescribed burning, regeneration harvests, and thinning—may improve viewing and hunting opportunities or create vistas along trails and at primitive campsites. Some dispersed recreation activities—such as bird-watching, hiking, hunting, nature studying, primitive camping, or wildlife viewing—may be affected temporarily by harvesting activities and temporary roads and skid trails.

Alternative B. This alternative would prohibit cross-country travel by motorized vehicles. A system of motorized-use trails would be identified, marked, and maintained for motorized recreation. User conflicts would be decreased by designating trails for specific types of use. Hikers, bicyclists, and horseback riders could still travel cross-country and use roads and trails. This would have a positive effect by reducing the maze of trails across the woods and providing trails designed to meet user needs. Negative effects would include an overall loss of riding area, a reduced sense of freedom and exploration, and heavy or concentrated use in some areas. Trail experiences would be more scenic in nature with smaller and fewer openings and more mature trees. Evidence of human influence would be seen in past and present timber harvesting activities, cattle grazing, temporary skid trails, and prescribed burning.

This alternative would provide areas of low and moderate recreation development on the Apalachicola NF, mainly along river bottomlands and in the Wallace Tract. This would increase opportunities for dispersed recreation that requires undeveloped or semiprimitive settings, as well as developed trails. Along bottomlands of the Ochlockonee and Apalachicola Rivers, harvesting of hardwood and cypress would not be allowed. This would result in these areas retaining their scenic qualities, enhancing dispersed recreation in these areas.

For the Osceola NF, Alternative B would provide low and moderate recreation development areas (DFCs 4.3 and 4.4), remote wetlands (DFC 1.1), and special interest areas (DFC 3.1). This would increase opportunities for dispersed recreation, especially bird-watching, hiking, nature studying, and wildlife viewing.

For the Ocala NF, there would be small areas for minimum development, motorized (DFC 4.2) (Hopkins Prairie and River Forest) and several special interest areas (DFC 3.1). Bottomlands along the St. Johns and Ocklawaha Rivers would not be harvested. All of these areas would provide opportunities for dispersed recreation.

Recreational opportunities would increase by placing more acres into recreation DFCs 4.1-4.4. In addition, this alternative represents a move toward diverse patch sizes. This would provide more areas with a continuous forest canopy and may result in a more attractive, parklike forest setting. A continuous forest canopy would provide attractive settings and more shade for trails. Under an uneven-aged system, natural and human-made openings may occur. These openings would provide variety in the visual landscape and recreation experiences.

Clear Lake WSA on the Apalachicola NF would be recommended for wilderness status. This would increase opportunities for wilderness experiences, as well as semiprimitive settings for activities such as hiking, horseback riding, and primitive camping. Opportunities for bicycle riding and motorized activities would be reduced.

Alternative C. The effects of this alternative would be similar to Alternative A. Alternative C would have the most extensive network of roads, a similar open cross-country vehicle policy as Alternative A, and an emphasis on even-aged management.

Wilderness acreage would remain the same, but four wilderness areas are designated as trailless wilderness (DFC 0.1). Because trails would not be developed or marked in these areas, this would result in a loss of primitive trail opportunities. It would increase opportunities for experiences on the primitive end of the spectrum—such as orienteering—and enhance opportunities for self-reliance, challenge, and risk. Neither Clear Lake WSA or Natural Area WSA would be recommended for wilderness status; they would be recommended for release to multiple-use management. This would result in fewer acres in primitive and semiprimitive recreation opportunity classes.

Alternative D. This alternative would have the most acres in DFCs 4.1-4.4 and could increase the dispersed recreation opportunities toward the primitive end of the spectrum. The full range of recreation DFCs would be found on the Apalachicola NF, with large areas of Ditch Bay, Gum Bay, Juniper Creek Islands, and Long Bay as semiprimitive. All recreation DFCs, except DFC 4.4, would be found on the Ocala NF. On the Osceola NF, more land would be placed in recreation DFCs than in the other alternatives for that forest. The large area of Impassable Bay would be placed in minimum development, nonmotorized (DFC 4.1). Bottomlands of the Apalachicola, Ochlockonee, and New Rivers would be in low or moderate recreation development (DFCs 4.3 and 4.4), as well as bottomlands of the St. Johns and Ocklawaha Rivers.

This alternative would recommend Clear Lake WSA, Natural Area WSA, and Pinhook Swamp for wilderness status, as well as small additions to Juniper Prairie Wilderness and Little Lake George Wilderness. This would increase opportunities for primitive and semiprimitive experiences, as well as opportunities for challenge, risk, self-discovery, and spiritual experiences in wilderness. This alternative also would recommend a small section of land between Little Lake George Wilderness and the Ocklawaha River be added to the Little Lake George Wilderness. Canoeists presently use this area, as well as motor-watercraft users. If added to the wilderness, watercrafts with motors would be prohibited. Opportunities for motorized recreation and bicycle riding would be reduced.

Alternative D would place four wildernesses in trailless wilderness (DFC 0.1). Bradwell Bay Wilderness would be one of these. This would result in relocating a portion of the Florida National Scenic Trail. This may reduce primitive trail opportunities. Hikers and horseback riders could continue to use the old trail, but it would no longer be maintained as part of the FNST. Rerouting the FNST to outside the wilderness would result in a loss of primitive settings along the trail, as well as the loss of some challenge and risk associated with wilderness trails. However, managing these areas as trailless would place more emphasis on the values of solitude, challenge, and risk.

This alternative would offer the widest range of recreational opportunities. For the Apalachicola and Ocala NFs, this alternative would allocate the most land into special interest areas, thereby increasing those dispersed recreation opportunities suited to these areas. The access policy for this alternative would be similar to Alternative B, with similar effects. Cross-country motorized travel would not be permitted. In some parts of the forests, motorized vehicles would be restricted to open, numbered roads and trails marked and designated for their use. While this may reduce a visitor's sense of freedom

and exploration, this alternative would designate a higher density of motorized-use trails than Alternatives B and E due to the recreation emphasis.

Alternative E. Moving toward diverse patch sizes would have effects similar to Alternative B. Alternative E would provide motorized and nonmotorized minimum recreation development areas (DFCs 4.1 and 4.2), moderate recreation development areas (DFC 4.4), remote wetlands (DFC 1.1), trailless wilderness (DFC 0.1), and wilderness with trails (DFC 0.2). This would increase opportunities for dispersed recreation experiences over current levels.

The access policy would prohibit cross-country travel by motorized vehicles and bicycles in some portions of the forests. Negative effects of this would be some loss of riding area, a reduced sense of freedom and exploration, and concentrated use on roads and trails. This would restrict hunting access in these portions of the forests, especially hunting with dogs since it would be more difficult for a hunter to track and catch hunting dogs. Beneficial effects include a more natural-appearing forest as the maze of crisscrossing roads and travelways would be reduced, trails designed to meet user needs, and user conflicts reduced through specialized and shared trails. This alternative includes a forest/urban interface (DFC 9.2) for the Apalachicola NF, which would result in the development of more trails closer to the population centers of Tallahassee and Crawfordville.

This alternative would place the bottomlands of the Apalachicola and Ochlockonee Rivers in moderate recreation development (DFC 4.4), and they would be unsuitable for timber production. Bottomlands of the St. Johns and Ocklawaha Rivers would be placed in hardwood/cypress, no timber production (DFC 5.1). Dispersed recreation would occur in these areas, with effects similar to Alternative B.

This alternative would add to the number of special interest areas on all forests. Opportunities would increase for those dispersed recreation activities that are suited to these areas—such as bird-watching, hiking, nature studying, visiting cultural/historic sites, or wildlife viewing.

Wilderness opportunities would be increased by recommending Clear Lake WSA for wilderness status and extending the eastern boundary of Juniper Prairie Wilderness to State Highway 19. This would increase opportunities for solitude, quiet, and primitive recreation. Recommending the release of Natural Area WSA to multiple use would provide more area of less-restricted access, decreasing opportunities to find semiprimitive settings but increasing opportunities for motorized recreation, bicycle riding, and other activities in roaded natural or rural settings.

Affected Environment

Developed Recreation

In Florida, developed recreation sites on the national forests have a combined capacity of approximately 11,100 persons-at-one-time (PAOT). Developed sites offer a range of

recreational opportunities. These include campgrounds, concession stands, fishing piers, interpretive trails, marinas, picnic areas, and swimming beaches.

Salt Springs Campground on the Ocala NF is the only campground that presently offers sites with electric and water hookups for recreational vehicles. There is growing demand for these types of facilities. The Forest Service plans a limited increase in the number of facilities that offer this level of amenities, since private and State campgrounds provide the full range of amenities for recreational vehicle campers. A more primitive experience can be found on the national forests.

Much of the recreation that occurs on the forests is water based. At some developed sites, boating and fishing are major activities. Apalachicola River, Camel Lake, Lake George, Mill Dam Lake, Ocean Pond, Ochlockonee River, St. Johns River, Wildcat Lake, and the many spring runs are used by watercrafts with motors and canoes.

Developed recreation sites are divided into development levels 1-5. The higher the number, the more elaborate and extensive the facilities provided. Because of the national forests' natural environment and sensitive character, most Forest Service-developed recreation sites are in the lower development levels. Higher development level recreation sites are more commonly found in rural parks and recreation areas close to urban centers.

Existing facilities consist of these development levels:

Number of Sites per Development Level

	Levels				
	1	**2**	**3**	**4**	**5**
Apalachicola NF	4	10	6	0	0
Ocala NF	13	11	10	2	1
Osceola NF	3	4	2	1	0

Environmental Consequences

Effects of prescribed burning on developed recreation sites would not change between alternatives. Areas surrounding developed recreation sites may be included in prescribed burns to maintain scenery diversity and control encroaching vegetation. Evidence of prescribed burns close to or within recreation areas would increase the opportunity for interpretation.

In recent years, use of personal watercraft has been increasing. The increase in water-based recreational facilities on national forests, such as boat ramps, may increase opportunities for use of personal watercraft. In small water bodies, this could lead to increased conflicts with other users such as anglers, canoeists, and swimmers.

For the purpose of land allocation for developed recreation, only the large, highly developed areas are allocated to the developed recreation management area (DFC 4.5) in the alternatives. Smaller, less developed areas are not allocated under a separate management area, but occur as inclusions within larger management areas if they are compatible with the desired future condition of the area.

Alternative A. Olustee Battlefield on the Osceola NF would be allocated to moderate recreational development (DFC 4.4). The following areas would be allocated to DFC 4.5:

Apalachicola NF—Camel Lake, Cotton Landing, Fort Gadsden, Hickory Landing, Hitchcock Landing, Lost Lake, Mack Landing, Porter Lake, Silver Lake, Trout Pond, Whitehead Lake, Wood Lake, and Wright Lake

Ocala NF—Alexander Springs, Big Bass Lake, Big Scrub, Buck Lake, Clearwater Lake, Farles Lake, Fore Lake, Grassy Pond, Hopkins Prairie, Juniper Springs, Lake Catherine, Lake Delancy, Lake Dorr, Lake Eaton, Lake Shore, Mill Dam, River Forest, Salt Springs, Silver Glen Springs, Sweetwater Cabin, and Wildcat Lake

Osceola NF—Ocean Pond and Olustee Beach

Alternative B. The only notable change in this alternative is that the Silver Glen Springs area on the Ocala NF would be designated and managed as a special interest area, emphasizing interpretation of manatee habitat and behavior. Less emphasis would be placed on developed recreation. Opportunities for interpretation could increase, but opportunities for snorkeling, sunbathing, swimming, and water play could be foregone or limited to summer months when the manatees are not frequenting the area. Similar springs in the area—such as Alexander Springs, Juniper Springs, and Salt Springs—could have increased use by those who previously used Silver Glen Springs. Picnicking, nature studying, and visiting archeological sites would continue.

Since the area is currently operated as a day-use fee area by concession, changing the area from a recreation site to a special interest area would mean that the concession permit would expire or would be terminated.

Alternative C. The area allocated to developed recreation (DFC 4.5) would remain the same as in Alternative A. Olustee Battlefield would remain as moderate recreational development (DFC 4.4).

Alternative D. Juniper Prairie Wilderness, located on the Ocala NF, would be expanded to include the area surrounding Sweetwater Cabin. This would result in Sweetwater Cabin being removed from the site. It would no longer be managed as a special-use permit concession and would be removed from developed recreation (DFC 4.5). This alternative would have the greatest acreage in DFC 4.5 compared to other alternatives.

On the Osceola NF, this alternative would allow for an increase in acreage dedicated to developed recreation. This would include the area surrounding Ocean Pond and Olustee Battlefield. Ocean Pond Campground and Olustee Beach are the only developed recreation sites on this forest, and during high-use periods the campground is often at capacity. Expanding these two areas would meet the future demands of an increasing population in the Jacksonville area and increase opportunities for boating, camping, fishing, hiking, and swimming. An expansion of Olustee Battlefield would permit the construction of additional recreation facilities. Currently the old railroad depot at Olustee is being restored, and the State of Florida would like to expand the battlefield area. This would increase opportunities for interpretive programs, increase protection for the

heritage resources associated with the battlefield, and permit better management of the annual reenactment of the Olustee Battle.

Alternative E. The allocation of areas to DFC 4.5 would be similar to Alternative A, except for the Osceola NF. This alternative would expand slightly the areas of Ocean Pond and Olustee Battlefield and increase the developed recreation capacity for the forest, with effects similar to those listed in Alternative D. Expanding these two areas would meet the future demands of an increasing population in the Jacksonville area and increase opportunities for boating, camping, fishing, hiking, and swimming. An expansion of Olustee Battlefield would permit the construction of additional recreation facilities. Currently the old railroad depot at Olustee is being restored, and the State of Florida would like to expand the battlefield area. This would increase opportunities for interpretive programs, increase protection for the heritage resources associated with the battlefield, and permit better management of the annual reenactment of the Olustee Battle.

Roadless Areas

Affected Environment

National Forests in Florida has 14 inventoried roadless areas (RARE II), plus an area on the Osceola NF called Pinhook Swamp. Pinhook Swamp has been evaluated as a roadless area for the Forest Plan revision. These areas have a combined total of 99,686 acres. Although these areas are referred to as roadless areas, some of them do contain roads as permitted in Forest Service Handbook (FSH) 1909.12, *Land and Resource Management Planning Handbook.*

Each roadless area was evaluated for its wilderness potential, using a report format in accord with CFR 219.17 (*see* Appendix C, ``Evaluation of RARE II Areas"). These reports consider wilderness potential in three categories: capability (the qualities that make an area suitable or unsuitable for wilderness), availability (assessing the wilderness and nonwilderness resources and local demands on the area), and need (existence of other wilderness in the area and trends in use). Table 3.24 lists the roadless areas and their acres. The Roadless Area Inventory maps show their locations.

Table 3.24

Roadless Areas and Their Acreage

Roadless Area	Acres
Alexander Springs Scenic Area	4,237
Baptist Lake	8,525
Bay Creek	5,645
Black Creek Islands	8,560
Buck Lake	5,680
Clear Lake WSA	5,635
Farles Prairie	2,467
Gum Bay	9,180
Impassable Bay	5,760
Long Bay	8,084
Natural Area WSA	4,400
Pinhook Swamp	15,403
Post Office Bay	7,280
Providence	6,885
Savannah	1,945
TOTAL	**99,686**

Note: Acres are approximate.

Roadless areas are either recommended for wilderness status, wilderness study area status, retained on the Roadless Area Inventory, or dropped from the Roadless Area Inventory. Florida Wilderness Act of 1983 requires that all roadless areas be evaluated for their wilderness potential during the Forest Plan revision.

Environmental Consequences

The following discussion indicates the various allocations of these roadless areas in the alternatives. Further documentation is found under ``Wilderness" in this chapter and in Appendix C.

1. **Wilderness.** Two wilderness study areas were identified by Congress through the Florida Wilderness Act of 1983. These areas have been managed to protect their wilderness potential and have been evaluated for their suitability as wilderness. Of these two areas, the recommendation for formal wilderness status varies among the alternatives.

2. **Wilderness Study Area.** Of the 15 areas evaluated, one is recommended for designation as a wilderness study area. The evaluation of Pinhook Swamp indicates its suitability for wilderness. Thus, in Alternative D, the desired future condition of this area is wilderness. The nomination process requires that areas first be recommended to Congress as wilderness study areas before attaining wilderness status.

3. **Retain on Roadless Area Inventory.** These roadless areas have retained a high degree of naturalness and primitiveness, and all are within criteria to be retained on the inventory. These areas are assigned to different DFCs by alternative. Effects on roadless characteristics will be analyzed in projects that may affect these characteristics.

4. **Drop from Roadless Area Inventory.** Some roadless areas have more roads and development than allowed by the criteria in FSH 1909.12 and, thus, are unsuitable as roadless areas and are dropped from the inventory.

Table 3.25 displays the above categories that each roadless area is allocated to by alternative. Roadless areas are allocated into various DFCs by alternatives (Table 3.26). Six roadless areas are dropped from the Roadless Area Inventory because they no longer contain the roadless characteristics necessary for inclusion. This would reduce the potential future supply of wilderness and primitive or semiprimitive settings. However, these areas are strongly influenced by roads and management activities and no longer have roadless characteristics. All six areas, especially Baptist Lake and Buck Lake, exceed the amount of roads allowed for their size. In addition, the influence of State Highway 65 and the railroad on the four areas on the Apalachicola NF reduce the opportunities to escape the sights and sounds of civilization. The existence of numerous timber sales also contributes to the evidence of human disturbance. Five of the nine roadless areas retained on the Roadless Area Inventory would have proposed boundary changes (*see* Roadless Area Inventory maps). These proposed changes are intended to carve out segments of the areas that have more roads than the criteria allows, or to add in further adjacent areas with truly roadless character. This would have a positive effect of allowing parts of some areas that no longer meet the roadless criteria to be retained on the Roadless Area Inventory by removing the more ``roaded'' portions. These areas would continue to be managed to preserve their roadless character, ensuring a potential future supply of wilderness. Negative effects of changing boundaries may be a decrease in the size of the areas to what is a minimum manageable area. This happened to Impassable Bay (reduced to 2,842 acres) and Natural Area (reduced to 1,348 acres). However, proximity to existing wilderness or other potential future wilderness makes the small size of these areas viable as roadless areas.

Table 3.25

Roadless Area/Wilderness Study Area Allocations by Alternative

Roadless Area/Wilderness Study Area	Alternatives A	B	C	D	E
Alexander Springs Scenic Area*	R	R	R	R	R
Baptist Lake	D	D	D	D	D
Bay Creek	D	D	D	D	D
Black Creek Islands	D	D	D	D	D
Buck Lake	D	D	D	D	D
Clear Lake WSA	WSA	W	R	W	W
Farles Prairie	R	R	R	R	R
Gum Bay*	R	R	R	R	R
Impassable Bay*	R	R	R	R	R
Long Bay*	R	R	R	R	R
Natural Area WSA	WSA	R	R	W	R
Pinhook Swamp	R	R	R	WSA	R
Post Office Bay	D	D	D	D	D
Providence	D	D	D	D	D
Savannah*	R	R	R	R	R

*with boundary change D - drop from roadless inventory R - retain on roadless inventory
W - wilderness WSA - wilderness study area

Table 3.26

Desired Future Condition Allocation of Roadless Areas by Alternative

RARE II Area*	Alternatives A	B	C	D	E
Alexander Springs Scenic Area	3.1	3.1	3.1	3.1	4.4
Baptist Lake	8.3	8.2	8.2	8.3	8.2
Bay Creek	6.1	7.1	6.1	7.1	7.1
Black Creek Islands	6.1	2.1	6.1	3.1 & 7.1	7.1
Buck Lake	8.3	8.2	8.2	8.3	8.2
Clear Lake WSA	0.4	0.2	6.1	0.2	0.2
Farles Prairie	6.4	3.1	4.2	3.1	4.2
Gum Bay	6.1	7.1	6.1	4.2	7.1
Impassable Bay	4.2	1.1	5.2	4.1	4.2
Long Bay	6.1	7.1	6.1	4.2	7.1
Natural Area WSA	0.4	7.1	6.1	0.2	7.1
Pinhook Swamp	N/A	1.1	5.2	0.1	1.1
Post Office Bay	6.1	2.1	6.1	3.1	7.1
Providence	6.1	7.1	6.1	7.1	7.1
Savannah	2.1	2.1	2.1	2.1	2.1

*RARE II - Roadless Area Review and Evaluation II
N/A - not applicable

Alternative A. Three areas would be included in DFCs suitable for timber production, and six areas would be in DFCs unsuitable for timber production. Natural Area and Clear Lake would be retained as wilderness study areas (DFC 0.4). Alexander Springs Creek, Impassable Bay, and Savannah would be allocated to DFCs that have a low probability of implementing management practices that may affect the roadless character of the areas. The remaining areas would be allocated to DFCs that have a higher probability of implementing management practices, such as timber sales, that could affect the roadless character of the areas.

Alternative B. Three areas would be included in DFCs suitable for timber production, and six areas would be in DFCs unsuitable for timber production. This alternative would protect and enhance the roadless areas and would increase opportunities for primitive recreation and public education. Clear Lake WSA would become wilderness, and once designated by Congress would be no longer carried on the Roadless Area Inventory. This would increase the amount of wilderness in Florida and in the National Wilderness Preservation System (NWPS). This also would increase opportunities for primitive and unconfined recreation, solitude, scientific study, and numerous other wilderness values. This would contribute to meeting future demands for wilderness from Tallahassee's growing urban population. By recommending this area for wilderness, future revenue from timber harvest and other consumptive uses would be foregone.

Natural Area WSA would not be recommended for wilderness but would be retained on the roadless inventory with a boundary change. The area has been managed to protect its wilderness potential since 1983, thus the roadless character of these areas has been essentially protected. Recommending Natural Area for release to multiple use would return the area to land suitable for timber production and allow a wider range of resource management, including timber harvest. The area would continue to offer semiprimitive recreation opportunities such as motorized-use and nonmotorized-use trails, primitive camping, and other dispersed recreation uses.

Alternative C. Six areas would be included in DFCs suitable for timber production, and three areas would be in DFCs unsuitable for timber production. The three areas in DFCs unsuitable for timber production also have a low probability of implementing management practices that may affect the roadless character. Clear Lake and Natural Area WSAs would not recommended for wilderness status and would be recommend for release as wilderness study areas, but they would be retained on the Roadless Area Inventory. These areas have been managed to protect their wilderness potential since 1983, thus the roadless character of these areas has been essentially protected. Not recommending the areas for wilderness would reduce the immediate potential wilderness. These areas would become suitable for timber production and available for timber management activities.

Alternative D. No areas would be included in DFCs suitable for timber production. Roadless characteristics would be enhanced for those remaining on the Roadless Area Inventory through allocation to DFCs—such as special interest areas (DFC 3.1), research natural areas (DFC 2.1), or low and minimum recreation development (DFCs 4.3 and 4.4).

Clear Lake and Natural Area WSAs would be recommended to Congress for wilderness status and once designated would not be listed on the Roadless Area Inventory. Pinhook Swamp would be recommended to Congress to become a wilderness study area and would be retained on the Roadless Area Inventory. This would result in the addition of 10,035 acres of wilderness in Florida and the NWPS and 15,403 acres of wilderness study area. With Clear Lake located near Tallahassee and Natural Area near Jacksonville, these areas would contribute to meeting the future demands for wilderness by these growing urban populations. By recommending these areas for wilderness or WSA status, revenue from timber sales and other commodities in the areas would be foregone. Motorized and developed recreation experiences would be foregone in the areas, but opportunities would increase for primitive and semiprimitive nonmotorized experiences.

Alternative E. Three areas would be in DFCs suitable for timber production, and six areas would be in DFCs unsuitable for timber production.

Clear Lake WSA would be recommended to Congress for wilderness status and once designated would be no longer listed on the Roadless Area Inventory. This would result in the addition of 5,635 acres of wilderness in Florida and the NWPS and would contribute to meeting the future demand for wilderness from Tallahassee's growing urban population. It would increase opportunities for wilderness experiences, primitive recreation, and other values associated with wilderness. It would represent a loss of motorized recreation experiences and future opportunities for developed recreation sites. Any future revenue from timber harvest or other resource extraction would be foregone.

In this alternative, Natural Area WSA would be recommended to Congress for release as a WSA and returned to multiple use. It would continue on the Roadless Area Inventory, with a boundary change to eliminate some of the more roaded portions. The effects would be similar to Alternatives B and C. The area would continue to offer semiprimitive recreation opportunities such as motorized-use and nonmotorized-use trails, primitive camping, and other dispersed recreation. Recommending Natural Area for release to multiple use would return the area to land suitable for timber production and allow a wider range of resource management, including timber harvest. The area would continue to offer semiprimitive recreation opportunities such as motorized-use and nonmotorized-use trails, primitive camping, and other dispersed recreation uses.

Scenery

Affected Environment

The national forests lie within a region characterized by a mosaic of areas devoted to agriculture and industrial forestry. The Apalachicola and Osceola NFs are covered by longleaf or slash pine forests interspersed with wetlands. These pinelands may have shrubby understories, usually gallberry or palmetto, or understories of grasses—especially wiregrass—and herbs. Where fire has been frequent, understory is low and viewers can see well into interiors of stands. Where wildfire has been suppressed and not fully replaced by prescribed burning, the understory is dominated by tall shrubs and views are restricted.

Wetlands typically have overstories of cypress, black gum, or bay and tall shrubby understories. Where these occur as stringers or domes in pinewoods, they provide visual variety. The Ocala NF is dominated by a sand pine scrub community, naturally composed of large blocks of even-aged stands that are short-lived and lack visual variety. The Ocala NF has some longleaf and slash pine interspersed with wetlands.
Permanent openings in any of these forests may be either natural (such as savannahs and prairies) or artificial (such as roadways and borrow pits). Most temporary openings result from timber harvests, though some may result from wildfires or storms. These openings allow some middle distance views in an area of such low relief that views are usually restricted to the foreground. A few bluffs along rivers also allow some middle distance views. Background distance views (beyond 1 mile) usually are unseen, except from the air.

On the forests, landscapes are considered common or undistinguished compared to landscapes characteristic of the surrounding region. Those landscapes considered distinctive are found near water features such as lakes, ponds, or streams, especially where these are combined with unusual plant communities.

All areas of the forests were inventoried for the Visual Management System, which is being replaced by an improved version called the Scenery Management System. They were scored for visual access to landscapes and level of concern for scenic quality. Visual access was usually the foreground view. The concern for scenic quality was scored from low to high, with a high score assigned to much-visited areas such as frequently traveled roads and to congressionally designated areas such as wilderness, wild and scenic river corridors, and the Florida National Scenic Trail. In this way, all areas were assigned a visual quality objective (VQO), which sets the degree of alteration of the existing landscape that is considered acceptable. Five visual quality objectives are defined as:

Preservation:	Only ecological changes are permitted.
Retention:	Landscapes are only imperceptibly altered, and management activities are not visually evident.
Partial Retention:	All deviations caused by human alterations and management activities remain subordinate.
Modification:	Human alterations and management activities seen as foreground or middle ground are dominant but appear natural.
Maximum Modification:	Management activities are dominant and may not appear natural when seen as foreground or middle ground, but they must relate harmoniously to the natural-appearing landscape when viewed as background (from an aerial perspective).

Based on a 1990 inventory, allocations on the national forests in Florida to the five VQOs are:

Visual Quality Objective	**Percentage**
Preservation	7.0

Retention	9.5
Partial Retention	37.0
Modification	15.0
Maximum Modification	31.5

This tabulation does not match that of Alternative A, because the interpretation of VQO assignment has changed. The old system assigns maximum modification to background acres of an undistinguished vegetation type, because scenery considerations would play little or no role in management activities. The new system, however, recognizes that expected activities would seldom create severely unnatural visual conditions, even in background views. A VQO of maximum modification is misleading and was reassigned as modification while changing to the new system.

Environmental Consequences

Populations in counties adjacent to the national forests can be expected to increase. This will increase the number of acres in forest/urban interface, and more people will be looking to the national forests for natural scenery that improves their physical and psychological well-being. Scenic viewing of forests along roads or trails likely will increase. In all alternatives, foregrounds of primary travelways would be assigned to a VQO of retention or partial retention. An exception occurs on the Ocala NF, where travelways through sand pine scrub would have a VQO of modification. Since the road system would remain the same across alternatives, the number of acres assigned to the VQOs of retention, partial retention, and modification within road corridors would be the same.

In all alternatives, most longleaf and slash pine areas would be managed so portions of the forests would have old pine trees. A small increase in adverse visual effects would result, however, from an increased incidence of snags in longleaf and slash pine areas. Trees in these older forests would die more often from natural causes such as lightning and insect infestation, and many would be left unharvested to support wildlife.

All alternatives propose prescribed burning on a 3-year cycle areas historically dominated by longleaf pine. Drifting smoke and blackened vegetation would be the main negative visual effects. Prescribed fires are set under favorable conditions that minimize adverse smoke effects. Much of the blackened ground vegetation would regrow within a month, but blackened tree boles and woody shrubs killed by the fire would remain much longer. These would adversely affect visual quality within sensitive foregrounds for a year or more. Repeated prescribed burning would promote an open understory dominated by herbs and grasses. This may be visually pleasing, since these areas would produce wildflower displays.

All alternatives encourage replacement of off-site species with species natural on the site. Most commonly this would involve replacement of slash pine with longleaf pine, but other situations might involve replacement of sand pine with longleaf pine, replacement of slash pine with pond pine or open savannah, and removal of titi shrubs from margins of wetlands. Since this involves harvesting trees, temporary reductions in visual quality would occur in some sensitive foregrounds. The long-term effect would be visually desirable since landscapes would resemble the natural character. Table 3.27 gives a breakdown by percent of visual quality objectives assigned to each alternative.

Table 3.27

Percent of Acres in Each Visual Quality Objective as Determined by Desired Future Condition

	Alternatives				
	A	**B**	**C**	**D**	**E**
Apalachicola NF					
Preservation	6.86	10.40	5.98	10.47	7.32
Retention	24.35	27.31	24.69	31.82	32.96
Partial Retention	44.16	62.23	44.98	48.31	59.66
Modification	23.58	.06	24.26	9.40	.06
Maximum Modification	.00	.00	.09	.00	.00
Recently Purchased	1.05	.00	.00	.00	.00
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Ocala NF					
Preservation	8.20	12.78	8.52	9.70	8.21
Retention	8.35	13.09	6.61	15.65	13.01
Partial Retention	13.17	24.67	15.89	14.59	26.09
Modification	69.16	48.34	67.86	59.06	51.57
Maximum Modification	1.12	1.12	1.12	1.00	1.12
Recently Purchased	.00	.00	.00	.00	.00
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Osceola NF					
Preservation	10.09	18.32	7.40	21.08	16.48
Retention	21.62	21.77	20.77	21.54	23.25
Partial Retention	39.02	58.80	40.69	43.48	59.11
Modification	20.04	.75	30.78	13.54	.80
Maximum Modification	.36	.36	.36	.36	.36
Recently Purchased	8.87	.00	.00	.00	.00
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
All Three Forests					
Preservation	7.86	12.53	7.07	12.00	9.15
Retention	18.58	21.67	18.03	24.75	24.74
Partial Retention	32.99	49.16	34.62	36.30	48.40
Modification	38.18	16.26	39.90	26.62	17.33
Maximum Modification	.38	.38	.38	.33	.38
Recently Purchased	2.01	.00	.00	.00	.00
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Alternative A. In this alternative, almost one-fourth of the Apalachicola and Osceola NFs would have a VQO of modification (*see* Table 3.27). This is partly because longleaf and slash pine would continue the current patch size structure with openings from 25 to 40 acres. Such openings may reduce the visual quality of those acres. The fact that cypress and hardwood would be suitable for timber production contributes to the lower visual quality score. This alternative has one of the lower harvest rates of longleaf and slash pine on the Apalachicola RD, because it would leave enough trees to provide the full RCW-foraging guideline. This would reduce opportunities to shape vegetation along the viewshed of Apalachee Savannahs Scenic Byway for improved visual effect.

Almost 70 percent of the Ocala NF would be in a VQO of modification (*see* Table 3.27). This is because clearcutting would be used to harvest sand pine. The negative visual

effect would be mitigated since clearcuts would not be larger than 120 acres, compared to 160 acres and 320 acres found in some of the other alternatives. The smaller size would be perceived as less visually monotonous.

Cross-country motorized vehicle travel would be allowed, which could create unnatural linear features in an otherwise natural-appearing landscape. At the same time, the number of miles of designated trails would be lower than most of the other alternatives. Therefore, fewer acres would be assigned to more sensitive visual quality levels associated with trails. Some roads would be scheduled for obliteration, which would contribute to a more natural-appearing forest.

Alternative B. This alternative would have few acres with a VQO of modification on the Apalachicola and Osceola NFs (*see* Table 3.27). In longleaf and slash pine, fewer large openings would occur during normal timber production, but they would occur for a time as part of the replacement of off-site species. The increased use of group selection harvests would leave harvest areas looking less disturbed. This would provide more opportunities to shape the vegetation in visually-pleasing ways along visually sensitive travel corridors. Also, timber production would not be allowed in hardwood and cypress. Those areas would not become visually modified by harvest activities.

Less than 50 percent of the Ocala NF would be in a VQO of modification (*see* Table 3.27), the lowest percent of all alternatives. This decrease would result from the Ancient Island area of the scrub becoming a candidate research natural area. Since management of an RNA emphasizes allowing natural processes or mimicking them, the visual result would be a natural-appearing landscape. Under this management, disturbances in the scrub would more often be stand-replacing fires and less often clearcuts. Clearcuts used to manage scrub on timber-producing acres would have a maximum size of 160 acres, an increase from the 120 acres found in some of the other alternatives. This would have a negative visual effect, since it would increase visual monotony.

Cross-country motorized vehicle travel would be prohibited. This would have less negative effects from creation of linear features. The number of miles of motorized-use trails would increase. This would increase the number of acres of trail corridors in partial retention. Some roads would be closed, contributing to a more natural-appearing forest.

Ochlockonee River and New River in the Apalachicola NF and Juniper Creek and Alexander Springs Creek in the Ocala NF would be recommended as wild and scenic rivers (*see* Table 3.38). This would keep the existing high quality of visual landscapes in the river corridors and increase the number of acres assigned a VQO of retention.

This alternative would recommend significant expansion of research natural areas. In addition to Ancient Island, the areas of Mud Lake and Mormon Branch (Ocala NF), Fanny Bay (Osceola NF), and a much expanded Savannah RNA (Apalachicola NF) would be recommended as research natural areas. This would protect the existing high visual quality of these landscapes and increase the number of acres assigned a VQO of preservation. On the other hand, it would limit opportunities to manipulate vegetation in the viewshed of Apalachee Savannahs Scenic Byway to improve visual effect.

Alternative C. This alternative, like Alternative A, would continue the current patch size structure for longleaf and slash pine. The resulting openings would have a negative visual effect. The effect would be greater in this alternative, because of shorter rotations outside RCW HMAs. These acres would be harvested more frequently. Timber production would be permitted in hardwood and cypress. Human-caused disturbances would be obvious in those areas. An area on the Apalachicola NF would be managed to provide wood fiber for energy production. The landscape there would be heavily altered by evidence of human disturbances, as a result of frequent timber harvests and artificial regeneration.

Clearcuts in sand pine would have a maximum size of 160 acres. This increase in the current maximum size of 120 acres would have a negative visual effect, since it would increase monotony of this landscape.

This alternative would have an access policy similar to Alternative A, with similar effects. Alternative C is distinguished by the fact that no roads would be closed. Therefore, the forest would be less natural appearing.

This alternative would not recommend additional river corridors as wild and scenic. Viewsheds of rivers, except the currently protected Sopchoppy River, would not receive added protection.

Alternative D. This alternative would designate areas with diverse patch sizes and other areas with the current patch size structure. The presence of large openings in some areas but not in other areas would give an overall intermediate effect. This alternative would have the largest number of acres unsuitable for timber production, leaving these areas looking less disturbed. Among these areas would be hardwood and cypress stands. On the Apalachicola RD, the full RCW-foraging guidelines would be met. Therefore, opportunities to use harvests to improve the viewshed of Apalachee Savannahs Scenic Byway would be limited.

This alternative ranks intermediate in the effect its proposed management would have on the visual environment of sand pine scrub. For most of the Big Scrub, it would maintain the current 120-acre maximum size of clearcuts, the most visually pleasing of the alternatives. Combined with this, however, is the proposal to allow a maximum clearcut size of 320 acres in the Ancient Island area. This would have a negative effect, since clearcuts that large would be monotonous.

Four additional river corridors, as in Alternative B, would be recommended as wild and scenic rivers (*see* Table 3.38). This would retain the existing high quality of landscapes in these river corridors and increase the acreage assigned a VQO of retention.

This alternative would more than double the number of acres devoted to developed recreation areas. This would result in an increase in the number of acres modified by recreation facilities. However, many forest visitors may regard these additional facilities as desirable alterations of forest landscapes.

The access policy would prohibit cross-country travel by motorized vehicles. The resulting positive visual effect would be that user-developed trails—with their loss of

vegetation, disturbance to the soil, and unnatural linear features—would not be created. The number of miles of designated motorized-use trails would increase, which would increase the acreage assigned a VQO of partial retention along trail corridors. Motorized vehicles would be allowed on unmarked travelways during hunting season. These travelways would remain on the landscape instead of undergoing natural obliteration. However, some road obliteration would occur, which would contribute to a more natural-appearing forest.

Alternative E. Management of longleaf and slash pine would have a similar visual effect as Alternative B. This alternative would have few acres with a VQO of modification on the Apalachicola and Osceola NFs. Fewer large openings would occur during normal timber production, but they would occur for a time as part of the replacement of off-site species. The increased use of group selection harvests would leave harvest areas looking less disturbed. This would provide more opportunities to shape the vegetation in visually-pleasing ways along visually sensitive travel corridors. Also, timber production would not be allowed in hardwood and cypress. Those areas would not become visually modified by harvest activities.

In sand pine scrub, the maximum clearcut size would be 160 acres in most of the Big Scrub, but a maximum of 320 acres in the Ancient Island area. This alternative would have the largest average opening size in this forest type.

This alternative would propose the same set of river corridors as wild and scenic as Alternative B (*see* Table 3.38), with the same effects.

The Savannah RNA (Apalachicola NF) would be expanded by adding more savannahs. This would preserve the existing savannah landscapes, but it would limit options for manipulating vegetation to improve the viewshed of the Apalachee Savannahs Scenic Byway. Effects would be less than in Alternative B, where adjacent pinelands also would be part of the RNA.

Developed recreation areas at Ocean Pond (Osceola NF) and Silver Glen Springs (Ocala NF) would be expanded. This would result in a slight increase in the number of forest acres modified by human activities. However, many forest visitors may regard these additional facilities as desirable alterations of forest landscapes.

The access policy would prohibit cross-country travel by motorized vehicles and bicycles, with the same effects as in Alternative B. The number of miles of motorized-use trails would increase. The acres in these travel corridors would be assigned a VQO of partial retention. Parts of each forest would be open to travel on unmarked travelways. Some obliteration of roads would occur, contributing to a more natural-appearing forest environment.

Timber

Affected Environment

The Multiple-Use Sustained-Yield Act of 1960 recognizes timber as one of the five major resources for which national forests are to be managed. National forest timber resources

are managed to provide timber for the use and necessities of the citizens of the United States, provide an even flow of timber to stabilize communities, provide for regeneration of tree stands, and maintain diversity of forest vegetation.

On the Apalachicola NF, pine types range from well-drained longleaf pine to poorly drained longleaf and slash pine. Loblolly pine occurs in the bottomlands along the main streams. Pond pine may be found on very poorly drained sites. Pine is usually second-growth timber. Hardwood occupies the bottomlands along main streams and in the interior swamps or bays of various sizes. Open, grassy savannahs and wet, brushy titi bays occupy portions of this forest.

The Choctawhatchee NF is a series of fragmented landholdings within Eglin AFB in the Florida Panhandle. The land is primarily in uses other than timber production, and some of the parcels are in nonforest categories.

On the Ocala NF, soils are predominantly sandy. Sand pine is found on a wide central ridge of deep, loose sands extending north and south through this forest. On both sides of this central ridge there are areas of mixed longleaf pine, scrub oak ridges, and slash pine flatwoods. The poorly drained areas in the flatwoods contain pond pine. Hardwood occupies the bottomlands along main streams and lakes.

The sand pine area, or Big Scrub, is the largest single type of timber on the national forests and the largest area of sand pine in the world.

On the Osceola NF, longleaf and slash pine are found on areas only a few feet higher than the adjoining swamps or bays. Hardwood types are found in interior swamps and bays. Pine is usually second-growth timber. Recent acquisitions have added more than 40,000 acres to the Osceola NF boundary. Most of this land is low, wet swamps with scattered flatwoods.

Recent Timber Production

A land-use system developed under National Forest Management Act guidelines determine which lands are suitable for timber production. Table 3.28 shows a breakdown of land suitability from the 1986 Forest Plan.

Table 3.28

Land Suitability for Timber Production, 1986

Land Type	Acres
Nonforest Land	32,200
Unsuitable	407,200
Suitable	659,700
TOTAL	**1,099,100**

Timber bought from the national forests indicates a wide range of raw material needs, species, and products produced. When addressing the market for timber, it is perhaps best

to talk in terms of sawtimber and roundwood components. The following are products sold by the national forests in Florida:

Pine Sawtimber
Pine Roundwood
Sand Pine Roundwood
Hardwood Sawtimber
Hardwood Roundwood
Posts

Pine roundwood is all pine species, except sand pine, from 5 inches to 11.9 inches in diameter. Sand pine roundwood is sand pine larger than 5 inches in diameter. Hardwood sawtimber is all hardwood, including cypress, that are 12 inches and larger in diameter. Hardwood roundwood includes hardwood and cypress 6 inches to 11.9 inches in diameter. Prices received for timber from national forests depend to a great extent on forces external to the local market. Demand for timber is largely a derived demand. For example, demand for sawtimber is derived mainly from the demand for lumber used for housing.

Between the DEIS and FEIS, the specifications for pine sawtimber changed from 10 inches or larger to 12 inches or larger. All of the sawtimber volumes displayed in this FEIS are based on a 10-inch minimum diameter for pine sawtimber.

Average prices received for pine sawtimber (per MBF) and pine roundwood (per CCF) are presented in Table 3.29 for the years 1991 through 1997. The average high bid is presented for both sawtimber and pine roundwood by individual forest.

Table 3.29

Average Pine Stumpage Prices, 1991-97

National Forest	Year	Sawtimber ($/MBF)	Pine Roundwood ($/CCF)
Apalachicola			
	1991	202.59	42.28
	1992	190.89	40.89
	1993	298.20	53.51
	1994	271.82	65.63
	1995	307.42	58.12
	1996	250.91	63.36
	1997	230.24	49.79
Ocala			
	1991	147.32	40.97
	1992	.00	44.03
	1993	122.45	40.73
	1994	185.29	47.39
	1995	.00	60.60
	1996	498.31	54.80
	1997	212.85	48.50
Osceola			
	1991	210.62	44.26
	1992	231.06	51.35
	1993	258.17	90.56

1994	305.96	66.67
1995	396.22	78.25
1996	360.08	62.44
1997	179.42	63.23

MBF - thousand board feet CCF - hundred cubic feet

Table 3.30 shows the volume of timber sold on *National Forests in Florida* from 1986 through 1996. Since 1986, there has been a decreasing trend in timber sales. In 1987, 15.57 million cubic feet (MMCF) of timber was sold compared to a low volume of 6.28 MMCF in 1994. Timber sold on the Ocala NF remained fairly level from 1986 through 1996. The greatest reduction in volume sold during the period occurred on the Osceola NF with a high of 2.4 MMCF in 1987 and a low of 0.29 MMCF in 1994, an 88-percent reduction. The Apalachicola NF experienced a reduction from 3.8 MMCF in 1986 to a low of 1.03 MMCF in 1994, a reduction of 73 percent. The greatest reduction (97 percent) in timber sold during 1986-96 was in sawtimber on the Apalachicola NF.

Table 3.30

Timber Volume Sold, 1986-96
(Million Cubic Feet)

	Apalachicola NF	Ocala NF	Osceola NF	Totals
1986				
Sawtimber	2.06	0.21	0.87	3.14
Roundwood	1.74	5.90	1.01	8.65
TOTAL	**3.80**	**6.11**	**1.88**	**11.79**
1987				
Sawtimber	1.88	0.01	1.18	3.07
Roundwood	1.64	9.64	1.22	12.50
TOTAL	**3.52**	**9.65**	**2.40**	**15.57**
1988				
Sawtimber	1.58	0.05	0.82	2.45
Roundwood	1.90	6.87	1.09	9.86
TOTAL	**3.48**	**6.92**	**1.91**	**12.31**
1989				
Sawtimber	1.60	0.08	0.83	2.51
Roundwood	2.01	6.55	1.32	9.88
TOTAL	**3.61**	**6.63**	**2.15**	**12.39**
1990				
Sawtimber	0.67	0	0.67	1.34
Roundwood	1.81	4.71	0.75	7.27
TOTAL	**2.48**	**4.71**	**1.42**	**8.61**
1991				
Sawtimber	0.26	0.12	0.51	0.89
Roundwood	2.71	7.75	0.66	11.12
TOTAL	**2.97**	**7.87**	**1.17**	**12.01**
1992				
Sawtimber	0.04	0.03	0.31	0.38
Roundwood	1.92	6.77	0.47	9.16
TOTAL	**1.96**	**6.80**	**0.78**	**9.54**
1993				
Sawtimber	0.05	0.04	0.26	0.35
Roundwood	1.17	7.48	0.27	8.92
TOTAL	**1.22**	**7.52**	**0.53**	**9.27**
1994				
Sawtimber	0.01	0.04	0.08	0.13
Roundwood	1.02	4.92	0.21	6.15
TOTAL	**1.03**	**4.96**	**0.29**	**6.28**
1995				

Sawtimber	0.23	0	0.07	0.30
Roundwood	1.08	5.26	0.34	6.68
TOTAL	**1.31**	**5.26**	**0.41**	**6.98**
1996				
Sawtimber	0.07	0.04	0.08	0.19
Roundwood	1.48	6.70	0.40	8.58
TOTAL	**1.55**	**6.74**	**0.48**	**8.77**

Table 3.31 shows the harvest volumes from 1990 through 1996. This reflects the reduction in volume sold and fluctuates annually due to sale area conditions and market conditions.

Table 3.31

Forestwide Harvest Volumes, 1990-96

Year	Sawtimber (MBF)	Roundwood (CCF)	Total (MCF)
1990	22,600	82,340	11,169
1991	11,000	61,040	7,533
1992	9,200	86,360	9,831
1993	5,700	109,610	11,701
1994	2,700	71,060	7,506
1995	2,210	78,000	8,100
1996	2,052	49,315	5,304

MBF - thousand board feet MCF - thousand cubic feet CCF - hundred cubic feet
Note: 7.7 MBF = 1 MCF

Table 3.32 shows the estimated net annual growth and mortality of timber on the national forests in Florida. The net annual growth is the gross annual growth less the annual mortality. This reflects remeasurements of plots on the forests between 1987 and 1994. The total average net annual growth of pine timber on the forests was 26.4 MMCF and the average annual pine timber volume sold from the forests was 10.7 MMCF for the same period. The average annual pine timber mortality was 5.6 MMCF.

Table 3.32

Average Net Annual Growth and Mortality of Timber

National Forest	Type of Measure	Growth		Mortality	
		Pine	All Species	Pine	All Species
Apalachicola	Sawtimber	32.7 MMB	44.4 MMB	9.9 MMI	14.3 MMBF
	Growing Stock	8.9 MMC	12.2 MMC	2.6 MMC	5.4 MMC
Ocala					
	Sawtimber	30.3 MMB	35.0 MMB	5.7 MMI	6.4 MMB
	Growing Stock	12.8 MMC	14.0 MMC	2.4 MMC	2.7 MMC
Osceola					
	Sawtimber	19.7 MMB	24.5 MMB	2.3 MMI	3.8 MMB
	Growing Stock	4.6 MMC	6.5 MMC	0.6 MMC	1.1 MMC
Combined Forests					
	Sawtimber	82.8 MMB	104.0 MMBF	17.9 MMB	24.5 MMBF
	Growing Stock	26.4 MMC	32.8 MMC	5.6 MMC	9.2 MMC

MMBF - million board feet MMCF - million cubic feet
Source: 7th Forest Survey, Southern Research Station, Asheville, N.C., 1995.

No hardwood has been sold, other than firewood, during 1990-96. Prior to 1990, only a small amount of hardwood was sold.

It should be noted that an average of 65 percent of the annual offered volume from the national forests in Florida is made up of sand pine. This type occupies about 28 percent of the land base now classified as suitable for timber production.

For many years in the past, the removal of dead pine distillate wood (stumpwood) was a permitted and accepted practice. Between 1967 and 1977, 523,000 tons of stumpwood was removed from the Apalachicola NF. From 1978 through 1989, an additional 149,000 tons was removed. From 1987 through 1989, 26,430 tons of stumpwood was removed from the Apalachicola and Osceola NFs. Stumpwood sales have not occurred

since July 1991 when *National Forests in Florida* suspended the practice due to concerns about effects of the practice on threatened and endangered species.

National Timber Supply and Demand

The RPA Assessment of the Forest and Rangeland Situation in the United States—1993 Update highlights include:

- Increased commitment to manage Federal land for protection of watershed, wildlife habitat, threatened and endangered plants and animals, and ecological diversity has resulted in less timber being offered for sale.

- The 1989 assessment projected allowable sale quantities (ASQs) for national forests of 2.4 billion cubic feet in the year 2000 and increasing to 2.7 billion cubic feet by the year 2040. The 1993 update projects quantities of 0.9 billion cubic feet in the year 2000, increasing to 1.1 billion cubic feet by 2040.

- During the next 50 years, the consumption of paper and paperboard will grow more rapidly than any other categories of forest product.

- Real prices of softwood sawtimber and softwood lumber will rise steadily from current levels until 2010-2015, then stabilize or fall in subsequent periods.

- The national implications of public timber harvest reductions in the West will be lessened by significant interregional substitution, including increased imports from Canada. During the projection period, western regions will continue to lose their market share to eastern regions because of rising relative wood costs.

- The South will be the major source of any expansion in softwood timber supply for the next 50 years. If high planting rates in the South continue through the 1990s, product and timber prices will stabilize, and in some cases decline, after 2020.

- Hardwood will increase in importance relative to softwoods in total harvest in the United States as a result of increase use in lumber, fiber products, and fuelwood. In this expansion, the North has the potential to match the South in contributions to incremental fiber output.

- By 2040, the United States will remain a net-forest-product importer, but there will be a decline in the gap between imports and exports on a volume basis.

- Forest health continues to be a concern. Timber mortality increased substantially between 1987 and 1992 in all regions of the country, on all ownerships for both hardwood and softwood.

- Total forest growth on timberland declined about 2 percent between 1996 and 1991, the first decline since 1952. In the South, softwood removals exceeded growth by 14.1 percent in 1991. In the Pacific Coast region, growth exceeded

removal by 14 percent in 1991. For the Nation, the growth-removal ratio for softwoods was 1.09 in 1991.

- The number of species listed as threatened or endangered has increased by 197 since the 1989 assessment. These species are concentrated in the Southeast and Southwest.

Table 3.33 shows the national trend in timber volume offered and harvested in 1987, which was the peak year, and from 1990 through 1996 on national forests. Nationally, there has been a reduction of approximately 65 percent in the amount of timber offered from national forests from 1987 through 1996. The volume reduction on the national forests in Florida for the same period was 44 percent.

Table 3.33

Nationwide Timber Volume Offered and Harvested 1987 and 1990-96

Year	Volume Offered Billion Board Feet	Volume Harvested Billion Board Feet
1987	11.5	12.7
1990	11.1	10.5
1991	6.4	8.5
1992	5.1	7.3
1993	4.6	5.9
1994	3.4	4.8
1995	4.0	3.9
1996	4.0	3.7

Local Timber Supply and Demand

The Resources Planning Act provides for regional assessments of price, inventory, and harvest trends. The use of these trends on the national forests implies that Florida's forest economy and trends from national forest sales are adequately represented by regional trends.

North Carolina State University conducted a study to determine the applicability of regional price trends in Florida's planning process and to examine the impacts of changes in national forest timber harvest on stumpage prices. Aggregate sawtimber prices from *National Forests in Florida* were found to be consistent with the Region 8 prices used as a basis for the RPA projection.

A market area for timber from *National Forests in Florida* was defined to fall within 75 miles of each wood-processing plant accepting wood from the national forests within the last 5 years. This area includes 48 counties in Florida, 49 counties in Georgia, and 10 counties in Alabama. This area encompasses the most active softwood market in the world, reflected by the high proportion of industry-owned timberland and the highest stumpage prices in the Southeast. Distribution of commercial timberland within the market area over time by ownership class is listed in Table 3.34.

Table 3.34

Commercial Timberland Distribution
1970-72, 1980-82, and 1987-90

Land-Use Class	1970-72	1980-82	1987-90
	Percent Forestland		
National Forest	4	4	4
Other Public	5	6	7
Forest Industry	34	35	36
Nonindustry, Private	57	55	53
TOTAL	**100**	**100**	**100**

The southeastern timber supply situation is in a period of structural change. After at least 50 years of a steady increase in inventory with constant real prices, surveys indicate that removals exceeded growth in many areas during the mid-1980s. These surveys and increasing stumpage prices indicate increasing scarcity in the market area.

Harvest is expected to increase during the next 20 years. Applying the RPA southern harvest trends to the market area implies that harvests will increase by about 30 percent during the next 20 years. This increased trend will draw the softwood inventory down through this period, which indicates a tight softwood supply picture for the next 5-10 years. Hardwood inventory is expected to remain relatively flat through the period. Increased softwood harvest and declining inventory leads to dramatic price increases, estimated at 350 percent during 20 years.

Using 1994-95 as a base year, the price effects of different national forest harvest scenarios were estimated. This was done prior to final volume estimates of the alternatives considered in this EIS. The current annual average harvest of 10 MMCF/year was used as a basis for this projection. If harvest scenarios were less than this on national forests, harvests were increased on private lands. If harvest scenarios were more, harvests on private lands were decreased. The national forest total harvest was modeled ranging from 7 to 18 MMCF/year and sawtimber harvest ranged from 1 to 6 MMCF/year. The estimated price effect in the market area ranged from 0 to 3 percent using the total aggregate harvest of sawtimber and roundwood. One reason for the small effect is that in 1988 harvest from the national forests was only about 3 percent of the market area harvest and by 1994 the national forest harvest was only 1 percent of the total market area harvest for sawtimber and roundwood. The final estimated volume of the five alternatives considered in this EIS fell within the range of the previously estimated scenarios. Therefore, in all alternatives, price effects would range between 0-3 percent.

National Forests in Florida's current sawtimber harvest represents about 2.5 percent of the market area sawtimber harvest. The model indicates that tripling of sawtimber harvest over the base level leads to an initial 15-percent price effect that holds over the 20-year projection period.

The national forests represent less than 10 percent of the forestland in Florida, with less than 8 percent of the total growing stock. However, 44 percent of the growing stock more than 50 years old is in the national forests in Florida. The long-term viability of local

solid-wood producers will be affected by the limited availability of larger sawtimber on private lands. The closing of one mill in a rural county can have significant local results.

Florida's Forest Statistics, 1995

The Forest Service Forest Inventory and Analysis (FIA) Group periodically surveys and inventories forest resources. The latest inventory for Florida was completed in 1995. Before 1995, the previous inventory was completed in 1987. The following is a summary of the results. Between 1987 and 1995, area of timberland decreased by 2 percent. More than half the loss was diverted to urban and related land uses. Area of publicly owned timberland increased by 16 percent. Florida ranks first in the South in the amount of public timberland owned by a state government. Public ownership accounts for 19 percent of Florida's forestland (7% national forests and 12% other public), 31 percent is owned by forest industry, and 49 percent is owned by nonindustrial private landowners.

Pine plantations account for almost one-third of Florida's timberland, the highest of any Southern state. Natural pine stands declined by 20 percent and represent about 19 percent of the Florida's timberland. Hardwood stands decreased by 8 percent and comprise 39 percent of Florida's timberland. Pine forest types are predominantly slash pine (5.1 million acres). Loblolly pine accounts for 0.8 million acres, longleaf pine, 0.7 million acres, and sand pine, 0.6 million acres. Longleaf pine was reduced by 22 percent since 1987. National forests contain 24 percent of the Florida's longleaf pine acreage, 24 percent of the pond pine acreage, 30 percent of the sand pine acreage, and 4 percent of the hardwood acreage. National forests contain 14 percent of the pine sawtimber in Florida. National forests account for 22 percent of the natural pine acres more than 50 years old in Florida.

Volume of softwood growing stock increased in Florida by 5 percent from 1987 through 1995. Softwood species increasing in volume included loblolly (33%), sand pine (17%), and slash pine (10%). Softwood decreasing in volume were cypress (6%), longleaf pine (10%), and pond pine (3%). Net annual removals exceed net annual growth in cypress. Volume of hardwood growing stock increased almost 10 percent. Overall, softwood growth exceeded harvest by 13 percent. Hardwood growth exceeds removals by 83 percent. Since 1987, hardwood removals increased 33 percent. Hardwood sawtimber removals increased by 48 percent. Two-thirds of the hardwood removals came from lowland hardwood stands (Brown, 1996).

Florida's Timber Industry, 1989-95

The FIA Group also periodically surveys all primary wood-using plants in Florida to determine the amount and source of wood receipts, timber product drain by county, and interstate movement of industrial wood products. For inventory and reporting purposes, the FIA divides Florida into survey units: Northwest, Northeast, Central, and South. The following is a summary of the findings.

Industrial wood product output in Florida increased by 9.2 percent from 1989 through 1995. The total output was about 483 MMCF in 1989 and 527 MMCF in 1995. In 1995, about 46 percent of the production was from forest industry land, 45 percent from nonindustrial private land, 6 percent from public land other than national forest, and 3 percent from national forests. Saw-log output increased by 8 percent for the period. Softwood accounted for 97 percent of the total saw-log output in 1989 and 96 percent in 1995. Veneer-log output increased by 20.9 percent between 1989 and 1995. Roundwood output was 296 MMCF in 1989 and 321 MMCF in 1995. In 1989, 91 percent of roundwood output was softwood; in 1995, 88 percent was softwood. Other wood products include poles, posts, charcoal, mulch, and reconstituted panel wood. In 1989, 22 MMCF of other wood products were delivered. Softwood accounted for 96 percent of these products. In 1995, the output was 24 MMCF (Johnson, Jenkins, and Haxby, 1997; Davenport, 1991).

The number of primary wood-using plants decreased from 127 in 1989 to 113 in 1995. The greatest change was the number of sawmills, from 85 in 1989 to 68 in 1995. In the northeast region of Florida, where the Osceola NF is located, there were 63 primary wood-using plants in operation in 1995: 37 sawmills, 3 veneer or plywood mills, 5 pulpmills, and 18 miscellaneous mills. In the northwest region of Florida, where the Apalachicola NF is located, there were 24 primary plants in operation in 1995: 15 sawmills, 3 pulpmills, 1 plywood mill, and 5 miscellaneous mills. In the central-south Florida region, where the Ocala NF is located, there were 26 plants operating in 1995: 16 sawmills, 1 veneer mill, and 9 miscellaneous mills (Johnson et al., 1997; and Davenport, 1991).

Environmental Consequences

Major factors to consider in evaluating the effects of the timber management program on the forests include the acres of land suitable for timber production (Table 3.35), long-term sustained-yield capacity (LTSYC) (Table 3.36), and estimated timber yields or the allowable sale quantity (Table 3.37). Land suitable for timber production is determined by both capability and appropriateness of land for growing regulated crops of trees for industrial or consumer use. Long-term sustained-yield capacity is the highest uniform wood yield from lands managed for timber production that may be sustained, under a specified management intensity, consistent with multiple-use objectives. The ASQ is the maximum quantity of timber that may be sold from the area of suitable for timber production land covered by the Forest Plan for a period specified by the Forest Plan. Table 3.9 in the ``Vegetation'' section shows the estimated harvest acres by

alternative, by period. The documentation for timber suitability determination is found in Appendix B, ``Analysis Process."

Table 3.35

Percent of Forest Classified as Suitable for Timber Production by Alternative

Alternative	Percent Suitable
A	57
B	53
C	71
D	49
E	55

Table 3.36

Long-Term Sustained-Yield Capacity by Alternative
(Million Cubic Feet/Year)

Alternative	LTSYC*
A	13.5
B	13.0
C	16.5
D	11.2
E	17.5
Maximum Timber	25.2
1986 Forest Plan	29.3

*long-term sustained-yield capacity

The maximum timber benchmark (*see* Table 3.37) is used for comparison purposes. This shows the maximum total volume that may be produced during the planning horizon. The benchmark includes constraints for minimum legal requirements. The objective for this benchmark is to maximize volume and not present net worth (PNW) as in the alternatives.

Table 3.37

Estimated Allowable Sale Quantity by Period
(Thousand Cubic Feet)

Alternative A	Period 1	Period 2	Period 3	Period 4	Period 5
Pine Sawtimber					
Apalachicola NF	7,379	16,300	37,936	39,362	40,535
Ocala NF	909	6,697	10,698	9,641	13,873
Osceola NF	67	2,470	4,112	4,527	4,796
Subtotal	8,355	25,467	52,746	53,530	59,204
Pine Roundwood					
Apalachicola NF	12,902	12,837	5,235	3,509	2,186
Ocala NF	73,659	67,771	65,271	67,096	65,887
Osceola NF	1,558	2,147	2,986	2,824	2,113
Subtotal	88,119	82,755	73,492	73,429	70,186
Hardwood Sawtimber					
Apalachicola NF	2,079	2,226	1,764	2,016	2,142
Ocala NF	1,071	1,155	1,155	1,155	1,155

Osceola NF	1,193	1,242	828	828	1,201
Subtotal	4,343	4,623	3,747	3,999	4,498
Hardwood Roundwood					
Apalachicola NF	396	424	336	384	408
Ocala NF	204	220	220	220	220
Osceola NF	227	237	158	158	229
Subtotal	827	881	714	762	857
TOTAL	**101,644**	**113,726**	**130,699**	**131,720**	**134,745**

Table 3.37 (cont.)

	Period 1	Period 2	Period 3	Period 4	Period 5
Alternative B					
Pine Sawtimber					
Apalachicola NF	14,527	13,627	20,065	21,211	22,374
Ocala NF	2,695	2,962	5,852	6,715	7,126
Osceola NF	1,769	1,569	2,462	5,304	5,417
Subtotal	18,991	18,158	28,379	33,230	34,917
Pine Roundwood					
Apalachicola NF	12,402	13,302	6,865	5,719	4,555
Ocala NF	49,309	49,041	46,152	45,288	44,878
Osceola NF	1,440	4,404	3,676	833	721
Subtotal	63,151	66,747	56,693	51,840	50,154
TOTAL	**82,142**	**84,905**	**85,072**	**85,070**	**85,071**
Alternative C	**Period 1**	**Period 2**	**Period 3**	**Period 4**	**Period 5**
Pine Sawtimber					
Apalachicola NF	13,172	19,111	39,945	41,946	33,269
Ocala NF	7,363	9,183	8,642	9,225	12,689
Osceola NF	3,356	9,299	11,986	15,329	13,765
Subtotal	23,891	37,593	60,573	66,500	59,723
Pine Roundwood					
Apalachicola NF	15,490	14,474	5,252	6,582	6,388
Ocala NF	59,903	57,630	58,605	57,057	60,895
Osceola NF	1,828	7,039	7,034	2,645	4,748
Subtotal	77,221	79,143	70,891	66,284	72,031
Hardwood Sawtimber					
Apalachicola NF	16,761	16,557	8,916	6,120	13,570
Ocala NF	5,667	6,048	5,684	6,493	6,397
Osceola NF	8,590	8,666	7,822	8,699	8,247
Subtotal	31,018	31,271	22,422	21,312	28,214
Hardwood Roundwood					
Apalachicola NF	3,193	3,154	1,698	1,166	2,585
Ocala NF	1,079	1,152	1,083	1,237	1,218
Osceola NF	1,636	1,651	1,490	1,657	1,571
Subtotal	5,908	5,957	4,271	4,060	5,374
TOTAL	**138,038**	**153,964**	**158,157**	**158,156**	**165,342**
Alternative D	**Period 1**	**Period 2**	**Period 3**	**Period 4**	**Period 5**
Pine Sawtimber					
Apalachicola NF	12,922	11,961	24,745	28,117	30,254
Ocala NF	4,716	5,369	6,567	11,116	13,198
Osceola NF	2,321	2,835	10,384	14,308	15,082
Subtotal	19,959	20,165	41,696	53,541	58,534

Table 3.37 (cont.)

Alternative D (cont.)	Period 1	Period 2	Period 3	Period 4	Period 5
Pine Roundwood					
Apalachicola NF	7,503	8,464	8,942	5,570	3,434
Ocala NF	45,975	45,322	44,124	39,575	37,492
Osceola NF	1,683	6,777	6,839	2,915	2,141
Subtotal	55,161	60,563	59,905	48,060	43,067
TOTAL	**75,120**	**80,728**	**101,601**	**101,601**	**101,601**

Alternative E	Period 1	Period 2	Period 3	Period 4	Period 5
Pine Sawtimber					
Apalachicola NF	18,481	23,516	39,021	40,464	46,377
Ocala NF	2,484	2,461	1,904	4,954	4,160
Osceola NF	4,597	2,974	6,933	11,102	10,406
Subtotal	25,562	28,951	47,858	56,520	60,943
Pine Roundwood					
Apalachicola NF	16,717	16,238	13,579	12,136	6,222
Ocala NF	56,413	56,437	56,992	53,944	63,133
Osceola NF	4,276	9,492	5,589	1,419	2,116
Subtotal	77,406	82,167	76,160	67,499	71,471
TOTAL	**102,968**	**111,118**	**124,018**	**124,019**	**132,414**

Combined Forests Total Volume per Period (ASQ)*

	Alternatives					
Periods	**A**	**B**	**C**	**D**	**E**	**Maximum Timber**
1	101,644	82,142	138,038	75,120	102,968	120,841
2	113,726	84,905	153,964	80,728	111,118	160,475
3	130,699	85,072	158,157	101,601	124,018	197,251
4	131,720	85,070	158,156	101,601	124,047	198,738
5	134,745	85,071	165,342	101,601	132,414	202,697

*allowable sale quantity

Several silvicultural systems and regeneration methods are used for timber management. All alternatives permit the use of any silvicultural system and regeneration method based on site-specific requirements. Regeneration methods were modeled based on probable harvest methods to achieve the desired future conditions of the alternative. Some alternatives may emphasize the use of some methods over others.

Even-aged silviculture refers to regeneration methods that produce stands of trees where the main canopy level is dominated by trees essentially of the same age or at least of the same 10-year age class. An even-aged stand of one species usually has a canopy top primarily at a uniform height when viewed at stand level. Stand boundaries are usually distinct. An even-aged stand when viewed from different points usually has the same general appearance.

The clearcutting method has been used successfully to regenerated longleaf, slash, and sand pine. All trees within a stand are harvested in one cutting and are replaced by a new even-aged stand (Figure 3.12).
The seed-tree method has been used successfully to regenerate slash pine. The shelterwood method has been used successfully to regenerate longleaf and slash pine. All

trees within a stand are harvested in two or more cuttings and are replaced by a new even-aged stand (Figure 3.13).

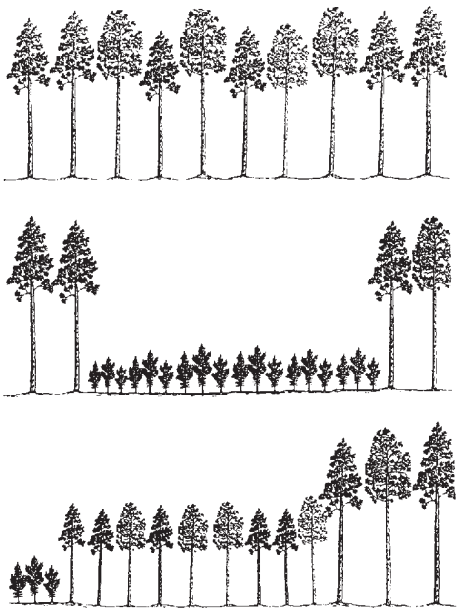


Figure 3.12. Clearcut Method.

Two-aged silviculture refers to the irregular shelterwood regeneration method which produces a stand of trees that contains two age classes for long periods for most of the rotation. Two-aged stands of one species when viewed from the side usually will have an irregular canopy for a long time. Stand boundaries may or may not be distinct depending on the growth of the younger age class and the remaining parent trees in each stand.

Trees remaining after the initial cut may be removed gradually or lost to natural mortality over the term of the new stand's rotation or left standing for an indefinite time creating a two-aged stand (Figure 3.14).

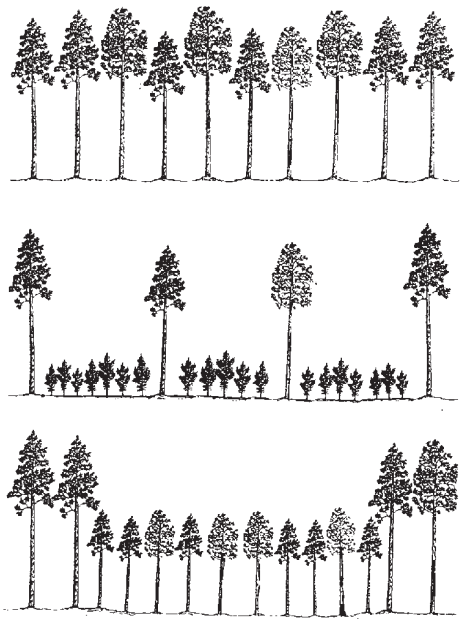


Figure 3.13. Shelterwood/Seed-Tree Method.

The irregular shelterwood method is untested in slash pine. This method has been tested in longleaf pine.

Uneven-aged silviculture refers to the regeneration methods that produce uneven-aged stands. The theoretical balanced uneven-aged stand would have trees of each age and/or size class to a maximum age or size, with each age and/or size class occupying an equal area. A balanced uneven-aged stand of one species has an irregular structure and canopy whether viewed at the stand level or landscape level. The stand viewed from the side shows many groups of trees with different heights and diameters.

Small groups of trees (¼ to 2 acres) are removed about every 10-20 years, making small openings to accommodate regeneration. The regeneration in the center of the moisture, nutrients from the surrounding large trees (Figure 3.15). Uneven-aged systems usually require more expertise land cost in sale preparation and administration.

The use of group selection to regenerate longleaf pine has had limited application. The use of group selection to regenerate slash pine is not known to have been applied operationally.

All alternatives would allow the use of prescribed fire, herbicides, or mechanical equipment as the primary forms of site preparation for natural and artificial regeneration. All methods and forms of site preparation are available but will be guided by the DFC of the area being treated. Environmental effects, human risks, and mitigation measures of these forms of site preparation are described in Chapter 3 of the *Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmon*t. All alternatives limit timber management by assigning desired future conditions to all national forest lands. These desired conditions were designed to meet the requirements of other resources and issues established through public involvement. Fire and prescribed burning would be similar for all alternatives.

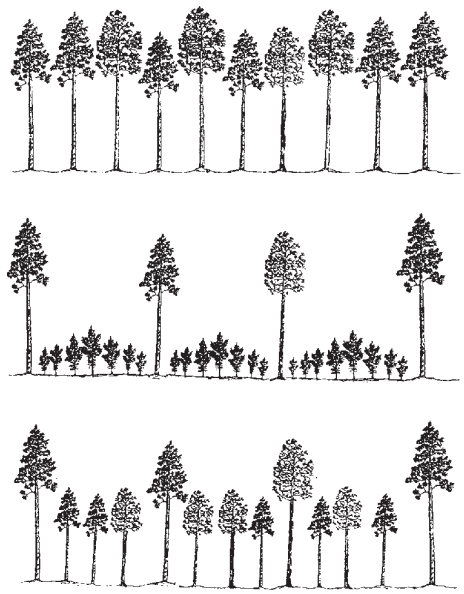


Figure 3.14. Irregular Shelterwood Method.

The policy of striving for a 3-year prescribed burn cycle would benefit timber management by reducing the amount of woody stems allowed to encroach in the understories, therefore reducing the amount and intensity of site preparation that would be needed to regenerate stands of timber in the future. On the other hand, frequent burning in slash pine stands may negatively affect regeneration since slash pine is not as fire tolerant as longleaf pine. Also, late summer burns pose a higher risk to reduce growth or kill pine timber. All alternatives would allow for the restoration of off-site slash and sand pine to longleaf pine. Although the amounts vary by alternative, the intention to replace these off-site species with the species that would grow best for the site would benefit timber management in the future rotations.

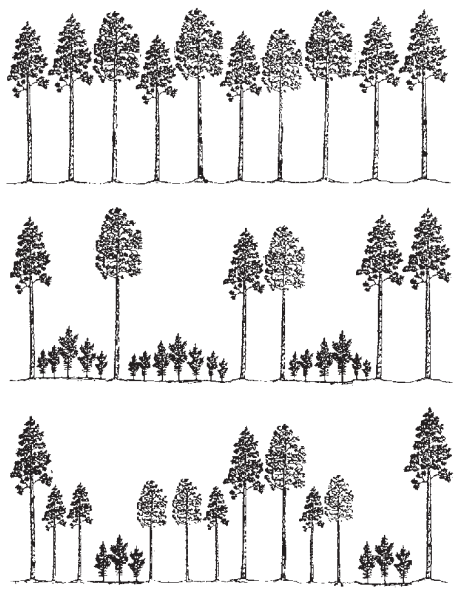


Figure 3.15. Group Selection Method.

The uneven-aged management system would be emphasized in Alternatives B, D, and E for longleaf, and some slash, pine sites. The method of uneven-aged management applied will be group selection. Group selection has not been implemented on a broad forestwide scale. The desired future conditions for

lands to be managed under group selection emphasis are called *adaptive management*. Not all the effects of this type of management are known, especially concerning habitat conditions for the RCW. The Apalachicola NF has just completed the first cut in a 700-acre block where uneven-aged management was applied. This first group selection cut has been coordinated closely with research and will be used as a learning tool to adapt uneven-aged management techniques for future use. All the effects of uneven-aged management are not known yet; however, some expected effects are as follows. It is anticipated there will be a substantial reduction in growth potential as compared to even-aged management for two main reasons. First, within the openings created there will be greater competition for sunlight, moisture, and nutrients from mature trees surrounding the openings. Second, there will be additional competition within and between ages or size classes. A few trees left remaining in the overstory has a significant effect on the growth and yield of longleaf pine seedlings beneath them. For example, a stand with 9 sq. ft. of overstory basal area will experience 59 percent less diameter growth than a stand with no overstory (Boyer, 1993). Leaving 20 sq. ft. of overstory basal area will cause a 31-percent reduction in timber volume in slash pine when compared to an open grown stand (Feduccia, 1978). Additional effects are found in Appendix B in the ``Timber Yields" section. Some other effects of uneven-aged group selection on timber management would be the increased cost of stand structure inventories, individual tree marking, and a future need for closer control of skid trails and log landings once regeneration patches become established.

Alternative A. This alternative ranks second in the amount of land classified as suitable for timber production (*see* Table 3.35), third in LTSYC (*see* Table 3.36), third in first period ASQ (*see* Table 3.37), and last in production of pine sawtimber in the first period (*see* Table 3.37). Hardwood/cypress and pine stands would be suitable for timber production. This alternative ranks last in the first period in the number of acres of longleaf pine restored, but it ranks first in the number of acres of sand pine regenerated and first in the number of acres of pine thinnings (*see* Table 3.9). This alternative does not emphasize uneven-aged group selection as a management system. This alternative would have the most acres in RCW HMAs. About 72.6 percent of the forests would be within an RCW HMA, where rotation ages would be 120 years for both slash pine and longleaf pine. Therefore, this alternative would have the most restrictions on timber management. The areas suitable for timber production outside an RCW HMA would be managed with minimum rotation ages of 60 years for slash pine and 80 years for longleaf pine. In longleaf and slash pine stands, irregular shelterwood and seed tree would be the predominant method of regeneration. The use of irregular shelterwood and seed tree would cause a growth reduction in the seedlings being regenerated in these two-aged stands, increasing the amount of time to grow merchantable-sized timber products. Growth reductions would not be as great as in group selection regeneration. Sand pine would be managed with a 50-year rotation and a maximum clearcut size of 120 acres. The access management policy for this alternative would allow cross-country motorized travel within the forest. This policy could have a negative effect in areas where seedlings and saplings are being established.

Alternative B. This alternative ranks fourth in the amount of land classified as suitable for timber production (*see* Table 3.35), fourth in LTSYC (*see* Table 3.36), fourth in first

period ASQ (*see* Table 3.37), and fourth in the amount of pine sawtimber in the first period (*see* Table 3.37). Hardwood and cypress stands would be unsuitable for timber production. This would not provide for management of the hardwood and cypress resources for long-term timber production. Hardwood may be sold and harvested in pine stands or in conjunction with ecosystem restoration—such as longleaf pine/turkey oak sandhills. The Pinhook purchase unit on the Osceola NF would not be within the RCW HMA. There would be two RCW HMAs on the Ocala NF. About 66.7 percent all forestland on the forests would be within an RCW HMA. Sand pine would be managed with harvests based on a 50-year rotation but would maintain 5 percent of the acres in 55-80 year age classes. The maximum harvest size in sand pine would be 160 acres. This alternative ranks fourth in the first period in number of acres of longleaf pine restored, fourth in the number of acres of sand pine regenerated, and second in the number of acres of pine thinnings (*see* Table 3.9). This alternative ranks second in the number of acres managed under uneven-aged group selection (*see* Table 3.9). The access management policy in this alternative would prohibit cross-country travel by motorized vehicles and restrict motorized travel to open, numbered roads and designated trails, which would help protect young seedlings and saplings.

Alternative C. This alternative ranks first in the amount of land classified as suitable for timber production (*see* Table 3.35), second in LTSYC (*see* Table 3.36), first in first period ASQ (*see* Table 3.37), and second in pine sawtimber production in the first period (*see* Table 3.37). Hardwood, cypress, and pine stands would be suitable for timber production. About 66.5 percent of the forests would be within an RCW HMA, where rotation ages would be 100 years for slash pine and 120 years for longleaf pine. Longleaf and slash pine outside an RCW HMA would be managed the same as in Alternative A, except regular shelterwood, seed tree, and clearcutting would be more common. There is an energy wood area (DFC 6.5) where trees would be grown on very short rotations to maximize fuelwood production. Sand pine would be managed with a 50-year rotation, with 5 percent in the 55-80 age class and a maximum clearcut size of 160 acres. This alternative ranks second in the first period in number of acres of longleaf pine restored, second in the number of acres of sand pine regenerated, first in the number of acres of hardwood regenerated, and fourth in the number of acres of pine thinnings (*see* Table 3.9). This alternative does not emphasize uneven-aged group selection as a management system. The access management policy for this alternative would allow cross-country travel within the forests. This policy could have a negative effect in areas where seedlings and saplings are being established.

Alternative D. This alternative ranks last in the amount of land classified as suitable for timber production (*see* Table 3.35), last in LTSYC (*see* Table 3.35), and last in first period ASQ (*see* Table 3.37), but it ranks third in pine sawtimber production in the first period (*see* Table 3.37). Hardwood/cypress stands would be unsuitable for timber production. This would not provide for management of the hardwood and cypress resources for long-term timber production. Hardwood may be sold and harvested in pine stands or in conjunction with ecosystem restoration—such as longleaf pine/turkey oak sandhills. About 66.7 percent of all forestland on the forests would be within an RCW HMA, where rotation ages would be 100 years for slash pine and 120 years for longleaf pine in areas managed under even-aged management. The remaining slash and longleaf

pine forests outside an RCW HMA would be managed with the same rotations. Sand pine would be managed with harvests based on a 50-year rotation. The maximum harvest size in sand pine would be 120 acres in most of the forest and 320 acres within an area of the Ancient Island scrub (DFC 8.1, sand pine, natural regeneration, large openings). Portions of the sand pine would be managed specifically for scrub-jay habitat where the area would remain in an early successional stage (DFC 8.4). This alternative ranks third in the first period in number of acres of longleaf pine restored, ranks last in the number of acres of sand pine regenerated, and ranks last in the number of acres of pine thinnings (*see* Table 3.9). This alternative ranks last of those alternatives that offer uneven-aged group selection as a management system (*see* Table 3.9). The access management policy in would prohibit cross-country travel by motorized vehicles and restrict motorized travel to open, numbered roads and designated trails, which would help protect young seedlings and saplings.

Alternative E. This alternative ranks third in the amount of land classified as suitable for timber production, first in LTSYC (*see* Table 3.36), second in first period ASQ (*see* Table 3.37), and first in production of pine sawtimber in the first period (*see* Table 3.37). Hardwood/cypress stands would be unsuitable for timber production. This would not provide for management of the hardwood and cypress resources for long-term timber production. Hardwood may be sold and harvested in pine stands or in conjunction with ecosystem restoration—such as longleaf pine/turkey oak sandhills. About 66.7 percent of all forestland on the forests would be within an RCW HMA. Sand pine would be managed with harvests based on a 50-year rotation but would maintain 5 percent of the acres in 55-80 year age classes. The maximum harvest size in sand pine would be 160 acres in most of the forest and 320 acres within an area of the Ancient Island scrub (DFC 8.1, sand pine, natural regeneration, large openings). Portions of the sand pine would be managed specifically for scrub-jay habitat where the area would remain in an early successional stage (DFC 8.4, scrub-jay management area). This alternative ranks first in the first period in number of acres of longleaf pine restored, third in the number of acres of sand pine regenerated, and third in the number of acres of pine thinnings (*see* Table 3.9). This alternative ranks first in the number of acres managed under uneven-aged group selection (*see* Table 3.9). The access management policy would prohibit cross-country travel by motorized vehicles and restrict motorized travel to open, numbered roads and designated trails, which would help protect young seedlings and saplings. This alternative would reduce stocking guides for longleaf, slash, and sand pine to a minimum of 200, 250, and 200 trees per acre, respectively. This could result in under utilization of the site for timber production.

Wild and Scenic Rivers

Affected Environment

National Forests in Florida has no rivers included in the National Wild and Scenic Rivers System. The *Final Environmental Impact Statement and Wild and Scenic River Study Report* for the Sopchoppy River, located in the Apalachicola NF, has been completed and has recommended designation of the entire 47.6-mile river study corridor. Additionally, in the context of the Forest Plan, four other rivers have been studied as to their eligibility,

suitability, and potential classification (*see* Appendix D, ``Wild and Scenic Rivers''). If the alternative chosen by the Forest Supervisor recommends designation of these rivers, these studies will be forwarded to the Secretary of Agriculture. Until a final decision is made by Congress, the Forest Service will protect those qualities that made these rivers eligible.

The four rivers, or segments of rivers, being studied include 52 miles of the New River and 59 miles of the Ochlockonee River, both in the Apalachicola NF; and 10 miles of Juniper Creek and 10 miles of Alexander Springs Creek, both in the Ocala NF. All four rivers were found eligible, except a 7-mile segment of New River. Portions of New River, Juniper Creek, and Alexander Springs Creek flow through designated wildernesses. National forest land comprises the majority of their study corridors. These rivers offer primitive and challenging experiences.

Other rivers identified as candidates for the National Wild and Scenic Rivers System are the Apalachicola River in the Apalachicola NF and the Ocklawaha River in the Ocala NF. However, national forest land makes up less than half of the study corridors for these rivers. The lead for wild and scenic river studies on these rivers needs to come under the purview of the State of Florida. Florida currently has only one National Wild and Scenic River, the Loxahatchee River located in Martin and Palm Beach Counties.

Except for Segment A of New River, segments were assigned a classification of either wild (those segments flowing through designated wilderness) or scenic. The four rivers have a combined total of 131 miles. A detailed map of each river segment is found in Appendix D. A summary of the rivers and their classification appears in Table 3.38. The evaluation of the Sopchoppy River was done in a separate EIS and is shown for information only.

Table 3.38

Wild and Scenic River Segment Classification and Length

	County	Miles	Classification
Alexander Springs Creek			
Segment A	Lake	7.0	Scenic
Segment B	Lake	3.0	Wild
Juniper Creek			
Segment A	Marion	7.0	Wild
Segment B	Marion	3.0	Scenic
New River			
Segment A	Liberty	7.0	Not Eligible
Segment B	Liberty	6.0	Scenic
Segment C	Liberty	10.0	Wild
Segment D	Franklin	29.0	Scenic
Ochlockonee River	Leon, Liberty, & Wakulla	59.0	Scenic
Sopchoppy River*			
Headwaters Segment	Wakulla	13.6	Scenic
Bradwell Bay Segment	Wakulla	6.0	Wild
Monkey Creek Segment	Wakulla	3.4	Scenic
Sopchoppy Segment	Wakulla	19.1	Recreational
St. Marks Segment	Wakulla	5.5	Scenic
TOTAL		**178.6**	

*Evaluation of the Sopchoppy River was done in a separate Environmental Impact Statement.

Environmental Consequences

In all alternatives, the Sopchoppy River would be recommended as a National Wild and Scenic River. River corridors recommended as wild and scenic would be managed to protect their wild or scenic qualities. This would result in a higher degree of scenery management than in those alternatives where corridors are not recommended for National Wild and Scenic River status. Table 3.39 shows the allocation of each river corridor by alternative.

Table 3.39

Desired Future Condition Allocation of River Corridors by Alternative

River Corridor	Alternatives A	B	C	D	E
Alexander Springs Creek	3.1, 0.	0.2, 0.	3.1, 0.2, 0	0.1, 0.2, 0	0.1, 0.2, 0.3
Juniper Creek	3.1, 0.	0.2, 0.	3.1	0.2	0.2, 0
New River	6.2, 0.	0.2, 0.	6.2	0.2	0.1, 0
Ochlockonee River					0
Sopchoppy River	0.2, 0.	0.2, 0.	0.2	0.1	0.2, 0

Alternative A. Only the Sopchoppy River would be recommended as a National Wild and Scenic River, a total of 47.6 river miles. Lands within the study corridors of Alexander Springs Creek, Juniper Creek, Ochlockonee River, and New River would be placed in DFCs that allow a wide range of management activities. Along the Ochlockonee River (DFC 5.2, hardwood/cypress, no timber production) and New River (DFC 5.2), hardwood, as well as pine, could be harvested in river bottomlands.

Along the Sopchoppy River, most of the corridor would be classified as scenic or recreational, and only the portion flowing through Bradwell Bay Wilderness (6 miles) would be classified as wild. Thus, a wide range of silvicultural activities would be allowed in the scenic and recreational segments. However, these management activities would be subordinate to recreational and scenic values. Wild and scenic status for the Sopchoppy River would have little affect ``on the ground." Designating the Sopchoppy River as a National Wild and Scenic River would contribute to the prestige of Wakulla County and the State of Florida, since it would be only the second river in Florida to gain this status.

Alternative B. All five rivers would be recommended for wild and scenic status—Sopchoppy River (47.6 miles), New River (45 miles), Ochlockonee River (59 miles), Juniper Creek (10 miles), and Alexander Springs Creek (10 miles). Of the total of 178.6 river miles that would be recommended, 30 miles flow through designated wilderness (Bradwell Bay, Mud Swamp/New River, Juniper Prairie, and Alexander Springs Wildernesses). All other river miles would be classified as scenic or recreational. In scenic and recreational segments, a range of forest management activities would be permitted in some pine types outside special management zones. The visitor would see evidence of thinning, salvage, or ecosystem restoration. However, these management activities would be subordinate to recreational and scenic values.

The hardwood bottomlands of the Apalachicola and Ochlockonee Rivers would be in DFC 4.4, in which hardwood and cypress would not be harvested. This will result in no hardwood timber production. Thinning and ecosystem restoration would be evident in some pine types outside special management zones. Visitors using the river may see evidence of forest management activities. However, these management activities would be subordinate to recreational and scenic values.

River corridors would be managed to protect their wild or scenic qualities. This would result in a higher degree of scenery management than in those alternatives where corridors are not recommended for National Wild and Scenic River status.

Except on Juniper Creek and Alexander Springs Creek, most users are local residents. There would be some increase to the local economy as people from nearby counties come to canoe or recreate on a designated National Wild and Scenic River and spend money in the local businesses. Frequently, designation brings with it increased public interest and pride in a river. The largest effect of designating these rivers is the societal benefits, the prestige of having a National Wild and Scenic River in the area. Recognizing these rivers as wild and scenic would help keep the river in its present natural state and would help emphasize its scenic quality.

Alternative C. Effects of this alternative would be similar to Alternative A. Other than the Sopchoppy River, no rivers would be recommended for National Wild and Scenic River status. While Wakulla County may see some benefits in having a wild and scenic river, those benefits would be foregone in Franklin, Lake, Liberty, and Marion Counties.

Alternative D. Effects of this alternative would be similar to Alternative B.

Alternative E. Effects of this alternative would be similar to Alternative B, in which all five rivers would be recommended for National Wild and Scenic River status, a total of 178.6 river miles. Socioeconomic benefits of having a wild and scenic river would accrue to the counties where these rivers are located. There would be some increase to the local economy as people travel to the area to canoe or recreate on a designated wild and scenic river. Since Florida currently has only one National Wild and Scenic River, the Loxahatchee River, some prestige would accrue to the state as a whole from the standpoint of having rivers in a near-pristine or natural state, and add to list of state attractions. The characteristics and values of the rivers would be protected. In the scenic and recreational segments, a range of forest activities would be permitted, including timber harvesting in some pine types outside of special management zones, with resulting public benefits. However, these management activities would be subordinate to recreational and scenic values.

Wilderness

Affected Environment

There are seven designated wilderness areas and two designated wilderness study areas within the national forests in Florida. Bradwell Bay Wilderness was designated in 1975. The other six wildernesses and two wilderness study areas were designated in 1983 under the Florida Wilderness Act. The seven wilderness areas total 74,551 acres and two wilderness study areas total 10,035 acres. Table 3.40 shows the current surveyed acreages.

Table 3.40

Wilderness Acres

Wilderness	Acres
Alexander Springs	7,941
Bradwell Bay	24,602
Big Gum Swamp	13,660
Billies Bay	3,092
Juniper Prairie	14,283
Little Lake George	2,883
Mud Swamp/New River	8,090
TOTAL	**74,551**
Wilderness Study Areas	10,035
TOTAL	**84,586**

Wilderness in *National Forests in Florida* supplied 28.6 MRVDs of use in 1996, following a slight decline or leveling off of use from 1987-90. Low levels of use exist in wilderness, mainly due to the difficulty of traversing the swampy terrain and the heat and insects of a Florida summer. The majority of the wilderness ecosystems consists of an interior area of mixed hardwood swamp with a perimeter of pine flatwoods, but the Juniper Prairie Wilderness on the Ocala NF also has sand pine scrub areas and prairies.

Wilderness provides a variety of benefits, including primitive and unconfined recreation, research, education, habitat preservation, and ecosystem preservation. A designated 7-mile canoe trail is in Mud Swamp Wilderness on the New River, as well as a 7-mile canoe trail on Juniper Run in Juniper Prairie Wilderness. The Florida Wilderness Act of 1983 allows motorboats on Alexander Springs Creek in Alexander Springs Wilderness.

Other Wilderness Areas

There are other wilderness areas in Florida and Georgia that provide wilderness experiences for Florida residents. The National Park Service manages 1,296,500 acres of the Everglades National Park as wilderness, as well as parts of the Gulf Islands National Seashore. The U.S. Fish and Wildlife Service manages nine wilderness areas in Florida. A couple of these wilderness areas are close to the national forests: St. Marks National Wildlife Refuge is near the Apalachicola NF and Lake Woodruff is adjacent to the Ocala NF. In addition, the U.S. Fish and Wildlife Service manages the vast Okefenokee Swamp, not far from the Osceola NF.

Wilderness Demand

Following the direction in FSH 1909.12 and Regional guidance, projected wilderness demand was calculated through the year 2020. Using the 1996 RIM figure of 28,600 RVDs, projected demand for the period 1996-2000 is 30,402 RVDs, a figure easily within reach of current use levels. For the period 2000 to 2010 projected demand is 36,118 RVDs, and for the period 2010 to 2020 projected demand is 41,788 RVDs.

Wilderness capacity is addressed using a unit of measurement called a PAOT (people at one time). PAOT can be calculated with a formula that uses RVDs, the number of days in the managed season of use, the pattern of use ratio, and the average length of stay. Using this formula, the capacity for the national forests in Florida wildernesses was calculated to be 119.2 PAOT. This PAOT figure can be placed on an RVD per acre per year basis, resulting in a capacity of 2.165 RVDs per acre per year. This gives an idea of the total number of people an area is capable of supporting without impairing the enjoyment of the recreation experience. With 74,551 acres of wilderness, the practical maximum capacity for wilderness is estimated to be 161,403 RVDs per year. Thus, even with a projected demand of 41,788 RVDs by the year 2020, *National Forests in Florida* has the ability to meet the demand for wilderness.

In addition, a gap analysis was conducted for cities with more than a 50,000 population that are within 250 miles of a national forest wilderness in Florida. No gap exists, and all cities with more than a 50,000 population have access to a wilderness area.

Environmental Consequences

Alternative A. Clear Lake WSA on the Apalachicola NF and Natural Area WSA on the Osceola NF would keep the designation that was set by Congress. A study would be done and sent to Congress with recommendations about the allocation of these lands, as defined by the Florida Wilderness Act of 1983. This would result in an amendment to the Forest Plan once Congress has acted on the recommendations. Otherwise, there would not be an increase in wilderness acres. Wilderness use would remain at the same level, and the types of use would not change. The two wilderness study areas would continue to provide semiprimitive-motorized and nonmotorized recreation. All wilderness acres would be in DFC 0.2, wilderness with trails.

Alternative B. The Forest Service would recommend to Congress that Clear Lake WSA become a designated wilderness. This would add 5,635 acres to wilderness. Effects of this alternative would be the addition of upland pine/turkey oak ecosystem of Clear Lake to wilderness status. This ecosystem is not represented in wilderness at present in Florida. In Florida, all wilderness acres on national forests are in mixed hardwood swamps, pine flatwoods, cypress swamps, small amounts of dry prairies, and sand pine scrub ecosystems. The upland pine/turkey oak ecosystem in wilderness would increase the value of the area for scientific study and baseline monitoring.

If Clear Lake was added to wilderness, opportunities for solitude and primitive and non-motorized recreation—such as hiking, horseback riding, orienteering, and primitive camping—may increase. Many people find spiritual renewal and comfort in many parts of the forests. This value has been recognized by the Wilderness Act of 1963. An increase in wilderness acres in Florida would increase opportunities for the public to experience spirituality and peace and be surrounded by nature free of the evidence of humankind. As a wilderness, Clear Lake would offer more opportunities to view wildlife that prefer undisturbed areas, such as black bear.

Clear Lake's closeness to Tallahassee would create opportunities for the urban population to reach and explore wilderness. This could result in more people becoming aware of wilderness values. Although some people do not visit wilderness, they like to see it preserved for future generations. This alternative would increase social benefits related to the values of preserving wilderness for future generations, providing wilderness experiences for others, and protecting the wilderness for its own value. Having a wilderness close to an urban area also may result in negative impacts to the wilderness and to visitors from overcrowding, overuse, noise from traffic on State Highway 267 and aircraft from Tallahassee Regional Airport, and vehicle violations.

Adding Clear Lake to the wilderness system may represent a loss of opportunities for bicyclists and motorized-vehicle users and affect the practice of hunting with dogs. The higher ground found in this area is suited for all types of trails. If this area were to become designated wilderness, bicycle or motorized-use trails would not be developed. Watercraft with motors would be prohibited on the small lake. It would become more expensive to accomplish projects in the area, from trail maintenance to managing the RCW. Finally, all wilderness acres would be in DFC 0.2, wilderness with trails. This would provide primitive trail-hiking experiences; and those visitors seeking a more challenging type of orienteering or ``bushwhacking'' experience could obtain them in other parts of the wilderness.

Natural Area WSA on the Osceola NF would not be recommended for wilderness status and would be returned to the suitable land base. Positive effects of this would be a slight increase in the amount of timber harvested from the national forests and a slight increase in the harvesting of miscellaneous and special forest products. Opportunities for bicycle riding and motorized recreation would increase. In addition, the suppression and management of fire would be made easier due to increased access. Negative effects would include a loss of opportunity to use this area for baseline monitoring, loss of primitive and semiprimitive nonmotorized settings, and the area would not contribute to meeting any future demand for wilderness.

Alternative C. Wilderness acreage would not be increased. Clear Lake WSA on the Apalachicola NF and Natural Area WSA on the Osceola NF would be recommended for return to the suitable land base. Releasing these areas would result in a slight increase in the amount of timber harvested from the national forests and a slight increase in the harvesting of miscellaneous and special forest products. Motorized recreation and bicycle riding opportunities would increase slightly. Opportunities for providing more wilderness close to population centers would be lost, and the amount of future old growth these areas could provide would be reduced. Opportunities for other types of recreation—such as bicycling, hiking, horseback riding, motorcycle riding, and OHV riding—would continue if these lands were no longer in WSA status. Since WSAs have had no timber harvest or other forest management activities except prescribed burning since 1983, there may be a loss of opportunity to study these areas for baseline monitoring.

Billies Bay, Little Lake George, and Mud Swamp/New River Wildernesses would be in DFC 0.1, trailless wilderness. Hiking opportunities would not be lost, as hikers could

continue to seek old roads and game trails for access into the wilderness. Those seeking challenge and risk would find increased opportunities, as well as more solitude.

Alternative D. This alternative would recommend adding the most acres into wilderness. Both Clear Lake (5,635 acres) and Natural Area (4,400 acres) WSAs would be recommended for wilderness status. In addition, the interior part of Pinhook Swamp on the Osceola NF, about 29,569 acres, would be recommended for wilderness. The interior of Pinhook Swamp is still in a roadless, primitive condition and would provide excellent opportunities to experience challenge, risk, solitude, and wayfinding skills. It also represents a large block of undisturbed public land linking the Okefenokee Swamp in Georgia with the Osceola NF and would act as a significant corridor for the migration of wildlife species that depend on large areas of undisturbed land.

On the Ocala NF, Little Lake George Wilderness would be in DFC 0.1, trailless wilderness. A small strip of land between the northern boundary of Little Lake George Wilderness and the Ocklawaha River would be recommended to be included in the Little Lake George Wilderness. A small stream called Bear Creek flows through this small strip of land between the northern boundary of Little Lake George and the Ocklawaha River. Canoeists and motorboat users use the area for recreation and fishing. Designation as a wilderness area would prohibit motor-watercraft use and would limit fishing opportunities for those who presently gain access with watercrafts with motors. Canoe trails would not be marked in the area, and without a marked canoe trail many canoeists would not venture into its many twisting channels. The adventurous, risk-taking canoeist would have an opportunity to use outdoor and navigation skills not required in other parts of the river.

The area of Juniper Prairie Wilderness known as Pats Island would be recommended for declassification by Congress. This area contains a cemetery and evidence of the Long family homestead, made famous by Marjorie Keenan Rawlings' novel *The Yearling*. The site was used for filming the movie based on the novel, and the Long family retains strong ties to the land. Family reunions are held at the cemetery. These gatherings are managed as a nonconforming use of wilderness. Declassification, plus the Long family's attachment and use of the land, would present an opportunity to develop its interpretive potential.

The recommendation to declassify the Pats Island area includes extending the eastern boundary of the wilderness to State Highway 19, which would result in no net loss of wilderness acres. In addition, Sweetwater Cabin, which is not inside the wilderness boundary but has impact on the wilderness, would be removed. Sweetwater Cabin is an historic CCC structure, which is potentially eligible for listing in the National Register of Historic Places. The developed recreation experiences visitors currently obtain at Sweetwater Cabin would be eliminated. The removal of the cabin and accompanying infrastructure would create temporary impacts to the water and soil of the immediate area as heavy equipment would be needed. The effect of returning the land to a natural appearance would enhance wilderness values, offer more primitive recreation opportunities, and equalize the access to this area for all forest users. In addition, the

southwest corner of the Juniper Prairie Wilderness boundary would be extended to State Highway 40.

Finally, this alternative would recommend the most wilderness acres for DFC 0.1, trailless wilderness. Billies Bay, Bradwell Bay, and Little Lake George Wildernesses and the interior Pinhook Swamp would be recommended as trailless. There would be no effect of designating Billies Bay Wilderness, Little Lake George Wilderness, and Pinhook Swamp as trailless, because they presently have no designated trails. However, if Bradwell Bay Wilderness was placed in DFC 0.1, 11 miles of the FNST would be rerouted to outside the wilderness. This would change the recreational setting of the trail experience from primitive and semiprimitive nonmotorized to semiprimitive motorized and roaded-natural settings.

Alternative E. This alternative would increase the number of wilderness acres. It would recommend the 5,635-acre Clear Lake WSA be designated as wilderness, as well as an area adjacent to Juniper Prairie Wilderness, extending the boundary to State Highway 19. The effects would be similar to Alternative D, except Sweetwater Cabin would remain under special-use permit. Adding Clear Lake would increase the number of wilderness acres by 5,635 and would have the same effects as in Alternative B. The addition of a wilderness area near the population center of Tallahassee would provide more opportunities for visitors to experience wilderness. Adding Clear Lake to the NWPS would result in the inclusion of an ecosystem not currently represented in the system; on a national scale, this would help to ``round out'' the NWPS and ensure that a representative sample of this ecosystem would be protected. As stated in Alternative B, some negative effects of adding Clear Lake to the NWPS would be impacts from overcrowding, overuse, and vehicle violations, and noise impacts from traffic and aircraft.

This alternative does not recommend Natural Area WSA on the Osceola NF for wilderness status, with effects similar to Alternatives B and C. Returning the area to the suitable land base would increase slightly the harvest of timber and miscellaneous and special forest products. Vegetation management and fire suppression and management would be easier to implement. Opportunities for bicycle riding and motorized recreation would increase. Not recommending the area for wilderness status would result in a loss of primitive and semiprimitive nonmotorized settings, loss of opportunity for using the area for baseline monitoring, and a loss of potential old-growth areas. In addition, the area would not contribute to meeting any future demand for wilderness.

Billies Bay, Little Lake George, and Mud Swamp/New River Wildernesses would be in DFC 0.1, trailless wilderness. Since these areas currently have no designated trails except for the New River canoe trail, there would be little effect. Opportunities for challenge, risk, testing of outdoor skills, and solitude would continue. Opportunities for canoeing, hiking, or horseback riding along marked and maintained trails would decrease, although these activities could still occur in these areas on game trails and old woods roads.

Socioeconomic Environment

Socioeconomic Environment

Affected Environment

With ecosystems featured as the center of interest in managing national forest lands and the Forest Service recognizing humans as an integral part of ecosystems, the socioeconomic environment takes on added dimensions. In addition to the economic environment in which humans interact, there is a cultural/spiritual setting associated with the ecosystem landscape as well. This other environment is comprised of the values, attitudes, beliefs, and behaviors that have been cultivated over time and on which humans have become dependent for their physical and mental health. These values, attitudes, and beliefs are manifested in the choices humans make among their social, economic, and aesthetic needs provided by the landscape.

There are also traditional uses and past occupational patterns associated with national forest lands that have instilled a unique cultural link to certain areas by specific cultural groups. This is especially true for those whose ancestors were aboriginal inhabitants of the land. Through the Tribal Government Program, the Forest Service specifically seeks consultation with federally recognized tribes whose ancestors once inhabited national forest lands. The four main tenants of Forest Service policy are:

1. Maintain a governmental relationship with federally recognized tribal governments.

   Federally recognized tribes in Florida include the Seminole Tribe of Florida and Miccosukee Tribe of Indians of Florida. Although the center of the Poarch Creek Indians is not in Florida, their membership extends into Florida. There are also several tribes whose ancestors once lived in Florida before Indian removal policies forced migrations westward.

2. Implement our programs and activities honoring treaty rights and fulfill legally mandated trust responsibilities to the extent that they are determined applicable to National Forest System lands.

   In 1823, the ``Florida tribes'' ceded all claims to the Territory of Florida, except for one large reservation and several small ones. Further treaty negotiations between 1832 and 1834 resulted in the ceding of even more reservations and emigration westward. There are no reservation lands under Forest Service management. Individual tribal interests primarily concern cultural and spiritual practices and objects and allotments of land. No treaty or executive order contains reference to cultural, spiritual, or religious interests. There is no fiduciary or trust responsibility regarding these interests, but there are several Federal statutes that apply to these interests.

3. Administer programs and activities to address and to be sensitive to traditional native religious beliefs and practices.

4. Provide research, transfer of technology, and technical assistance to tribal governments.
   Forest Service land managers maintain ongoing consultation either directly with tribal government leaders and staff or through a State liaison which is currently the Florida Governor's Council on Indian Affairs. This government-to-government relationship establishes a sensitivity to traditional native religious beliefs and practices and builds partnerships for providing research and technological and technical assistance to tribal governments.

It is critical that we understand where humans fit biologically and culturally in ecosystems because sustaining biological diversity is not always complementary with human values, attitudes, and beliefs.

The challenge, according to former Chief of the Forest Service Jack Ward Thomas, ``is to sustain systems that are diverse, productive, resilient to short term stress and able to respond to long term change. . . ." We manage the forests for specific purposes (such as producing, restoring, or sustaining certain ecological conditions), for desired resource uses and products, and for aesthetic, cultural, and spiritual values.

The socioeconomic environment consists of the economical, physical, cultural, and spiritual conditions existing as places, settings, enclaves, or specialized landscapes within ecosystems at various scales. Modifications of those existing conditions not only change the physical environment, they change the economical, social, cultural, and spiritual conditions of those living in the area. Often the effects are felt well beyond local communities.

Under ecosystem management the forest is viewed as a composite of tangible and intangible values in both a biological and social context.

In 1994, a values poll of U.S. residents was commissioned by the Forest Service to gather perceived values related to the use and care of public forests and grasslands (Hammond, 1994). Results of this poll indicated that the overriding concern of U.S. residents is maintaining healthy public forests and grasslands. Other major themes identified were:

- The Federal government should take a scientific approach to the management of public forests and grasslands.
- Creating recreation opportunities on public lands is important to the public.
- The Federal government should balance recreational use of public land with logging, mining, and grazing uses.
- The Federal government has an obligation to maintain healthy public forests.
- The Federal government should inform and interact with the American people so the public can take an active role in managing and protecting public forests.
- The long-term health of forestland should not be compromised for short-term gains.

- Federal and State government agencies represent the public's interest in public land management.
- The consumer needs of the American public should not be satisfied at the expense of the health of public forests.
- It is the role of the Federal government to discover and disseminate new information for solving the natural resource problems of the future.
- The Federal government should assist State and local government agencies and private landowners in managing forestlands.

Apalachicola National Forest

Human Dimensions

``My family has used these woods and rivers for generations." These are not the prideful words of a rural landowner talking about his or her 40 acres, but the words of a native Franklin, Leon, Liberty, or Wakulla County citizen talking about the Apalachicola NF. From this point of view, the forest is a backyard. Recreation on the Apalachicola NF is primarily a local use. Fishing and hunting are the preferred activities of the local population, although horseback riding and biking are increasing in popularity.

Seminole populations once inhabited areas of the Apalachicola NF—a prime example is Fort Gadsden. Some areas that were once administered as the Choctawhatchee NF were inhabited by ancestral relatives to the Poarch Creek Tribe. Tribes that were removed from Florida also have interest in these areas.

The Apalachicola NF's facilities are small compared to other national forests in the state and region. Their size and location along lakes and rivers provide an intimate quality that is being discovered by Florida nonresidents. Return visits are now the rule more than the exception.

Residents of the counties surrounding the Apalachicola NF, who have made their livelihood from timber activities associated with the forest, are experiencing dramatic changes in their lives because management of resources on this forest has changed rapidly. Recent reductions in timber products from the forest has affected jobs and the local economies of Calhoun, Franklin, Liberty, and Wakulla Counties.

The people of the rural counties surrounding the Apalachicola NF are blessed with a large, essentially undeveloped landscape—rich in diverse forest and water environments. This large natural setting is unique in Florida and consequently attractive to all sorts of urbanizing enterprises.

Geographics

Located in what is referred to as the Big Bend area of Florida, the Apalachicola NF straddles the physiographic regions called the Apalachicola Delta and the Woodville Karst Plain. It is dominated by high pine, pine flatwoods, sand hills, bayheads, and cypress swamps (Clewell, 1971). Counties directly affected by national forest

management are those containing national forest lands. These include Franklin, Leon, Liberty, and Wakulla Counties. Counties indirectly affected by national forest management are those with timber-processing facilities that utilize wood from national forests. For the Apalachicola NF, these include Bay, Calhoun, Gadsden, Gulf, Madison, and Taylor Counties in Florida and Early, Grady, Lowndes, and Thomas Counties in Georgia (Official IMPLAN Map). Tallahassee, the state capital, borders this forest to the northeast.

Demographics

The 1990 census showed a total population of 221,300 for the directly affected area. Tallahassee has a population of 124,773. This is a 29-percent increase over the 1980 population of 171,600. All the other incorporated towns have less than 7,000 population (*1996 Florida Statistical Abstract*, Table 1.31, hereafter referred to as *96 Abstract*).

All the affected counties, except Franklin County, experienced an estimated population increase higher than the state average from 1986 through 1995. Liberty County experienced the greatest increase in population for the period (Table 3.41).

Table 3.41

Estimated Population Growth, 1986 and 1995
(Apalachicola National Forest)
(Thousands)

	1986	1995	Percentage of Change
State of Florida	11,654	14,149	21
Franklin County	9	10	19
Leon County	170	218	28
Liberty County	5	7	50
Wakulla County	13	17	32

Source: *1996 Florida Statistical Abstract*, Table 1.20 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

The area has a population younger than the state estimated average of 37.8 years, probably due in large part to the existence of major universities in the area. Leon County, the most populous of the four counties, has an estimated median age of 22.2 years. The other counties have median ages below the statewide median, the only exception being Franklin County at 41.9 years. Franklin County has the largest percentage (19%) of people over age 65; the other counties have 8-14 percent of their population over age 65 (*96 Abstract*, Table 1.35).

Except for Franklin County, the population of the Apalachicola NF influence area is predominantly white, about 70-86 percent. Only Leon County has Hispanic populations greater than 2 percent (*96 Abstract*, Table 1.36).

Leon County is highly urbanized with 83 percent of the population in urban areas. Franklin County (30%) has a significant percentage of urban population, reflecting the populations of Apalachicola. Liberty and Wakulla Counties, where most of the

Apalachicola NF is located, report no urban population (*1995 Florida Statistical Abstract*, Table 1.11, hereafter referred to as *95 Abstract*).

Aid to families with dependent children increased by 46.4 percent statewide from 1986 through 1995. Franklin, Liberty, and Wakulla Counties experienced a decrease in aid, while Leon County had a slight increase (Table 3.42).

Table 3.42

Aid to Families with Dependent Children, 1986-87 and 1994-95 (Apalachicola National Forest)

	1986-87	1994-95	Percentage of Change
State of Florida	$494,347	$723,843	46.4
Franklin County	$1,118	$450	-59.7
Leon County	$9,439	$10,412	10.3
Liberty County	$621	$340	-45.2
Wakulla County	$1,055	$991	-6.1

Sources: *1996 Florida Statistical Abstract*, Table 7.18 and *1988 Florida Statistical Abstract*, Table 7.18 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Income and Education

Per capita personal income as reported in 1994 for the four-county area is noticeably less than the statewide per capita personal income of $21,767 (*96 Abstract*, Table 5.10). Even Leon County—with the state capital, Florida State University, Florida A&M University, and other major industries and retail centers—reported a per capita personal income of only $19,759. The other counties have per capita personal incomes of $13,000-$15,000, with Liberty County reporting the lowest per capita personal income of $13,740. Franklin County has 20 percent or more of families below the poverty level (*96 Abstract*, Table 5.50).

Per capita personal income increased in all affected counties from 1986 through 1994. Franklin, Leon, and Wakulla Counties increased at a rate above the state and national average, while Liberty County increased at a rate slightly below the state and national average (Table 3.43).

Table 3.43

Per Capita Personal Income, 1986 and 1994 (Apalachicola National Forest)

	1986	1994	Percentage of Change
United States	$14,906	$21,696	45.6
State of Florida	$15,041	$21,767	44.7
Franklin County	$9,813	$15,203	54.9
Leon County	$12,891	$19,759	53.3
Liberty County	$9,777	$13,740	40.5
Wakulla County	$9,874	$15,721	59.2

Source: *1996 Florida Statistical Abstract*, Table 5.10 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Except for Leon County, all of the counties in the Apalachicola NF influence area are below the statewide median household income of $32,212 reported in 1989, most having median household incomes of around $20,000-$27,000 (*95 Abstract*, Table 5.58). Franklin County ranks the lowest at $20,536. The median household income for Leon County was reported at $37,000, indicating a larger percentage of families with combined income in an area that offers more opportunities for employment.
Eighty-five percent of Leon County's population have high school diplomas, compared to statewide average of 75 percent. The percentage of the population with bachelor's degrees (21%) and graduate degrees (15%) is almost double the statewide average of 11.9 percent and 6.3 percent, respectively. Almost 75 percent of Wakulla County's residents over the age 25 have high school diplomas. The rest of the Apalachicola NF influence area has a lower percentage of high school graduates, ranging from 56 to 60 percent. The percentage of residents with bachelor's and graduate degrees is also much lower, generally half the statewide percentages (*95 Abstract*, Table 4.01).

School funding increased in all counties from 1986 to 1994. Franklin County and Liberty County increased at a rate lower than the state average. Leon County increased at a rate near the state average, and Wakulla County increased at a rate above the state average (Table 3.44).

Table 3.44

Elementary and Secondary Schools
All Funds by Revenue Source, 1986-87 and 1993-94
(Apalachicola National Forest)
(Thousands of Dollars)

	$/FTE	Federal	State	Local	Total	Percentage of Change
1986-87						
State of Florida	$3,879	$475,228	$3,581,688	$2,725,597	$6,782,513	-
Franklin County	$4,246	$742	$4,090	$2,001	$6,833	-
Leon County	$3,888	$7,558	$70,627	$29,270	$107,455	-
Liberty County	$3,923	$559	$2,995	$453	$4,007	-
Wakulla County	$3,705	$803	$7,649	$1,878	$10,330	-
1993-94						
State of Florida	$5,464	$921,140	$6,158,618	$5,024,416	$12,104,174	78.5
Franklin County	$5,487	$1,042	$5,155	$2,736	$8,933	30.7
Leon County	$5,782	$12,911	$112,895	$63,075	$188,881	75.8
Liberty County	$5,229	$624	$5,111	$738	$6,473	61.5
Wakulla County	$5,277	$1,307	$16,496	$3,154	$20,957	102.9

Sources: *1996 Florida Statistical Abstract*, Table 20.63 and *1988 Florida Statistical Abstract*, Table 20.63 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Employment/Economy

The structure of an economy and its relationship with the forest resources are important perspectives in developing a plan. Economic diversity addresses the number of sectors in an area and distribution of economic activity within these sectors. The level of economic activity in each sector is measured for several characteristics—total income, employment, exports, final demand, value added, and industrial output. A sector's importance may vary considerably between these characteristics. An economic input/output model (IMPLAN) was used to evaluate economic diversity and dependency. Table 3.45 shows diversity

characteristics for employment, employee compensation, and total income by major sector for the study area.

Employment is total wage and salary employees and self-employed jobs in the four-county area. It includes both full-time and part-time workers and is measured in total jobs.

Table 3.45

Diversity Characteristics by Major Sector
(Apalachicola National Forest)
(Percent)

Major Sector	Total Employment	Total Employee Compensation	Total Income
Agricultural, Fisheries, and Forestry	1.28	.45	1.03
Construction	5.88	4.99	6.91
Finance, Insurance, and Real Estate	5.41	4.81	12.38
Government Enterprises	34.55	43.42	32.56
Other Manufacturing	2.92	3.81	4.32
Other Nonindustry	.88	.32	.23
Primary Wood Manufacturing	.25	.31	.41
Secondary Wood Manufacturing	.06	.06	.06
Services	26.67	25.32	25.96
Transportation, Communication, and Utilities	2.27	3.27	4.07
Wholesale and Retail Trade	20.12	13.30	12.09

Employee compensation is wage and salary payments as well as benefits including health and life insurance, retirement payments, and any other noncash compensation. It includes all income to workers paid by employers.

Proprietary income consists of payments received by self-employed individuals as income. Other property type income consists of payments from interest, rents, royalties, dividends, and profits. Total income is the sum of employee compensation, proprietary income, and other property-type income.

Economic Dependency

Export base analysis is a well-established regional analysis technique for estimating an economy's dependency on exports. Dependency is a measure of the economy's ability to export and bring new money into the economy so that it can grow. This is not to imply that the only opportunity for economic development and growth is through exports, but that exports are a significant factor in this process. A measure of economic dependency is represented as a percentage of total exports associated with the basic economy within a study area. Further, a perspective of the economic dependency on a particular sector can be determined from individual sector information. Total exports is the sum of foreign exports and domestic exports.

> Foreign exports are demands made for goods and services by consumers and industries outside the United States. It is the value of commodities exported beyond national borders.
>
> Domestic exports are demands for goods and services by consumers and industries outside the study area but within the United States.

The distribution of total exports for the four-county study area by major sector is shown in Table 3.46. The production of exports is heavily concentrated in the services sector (44% of total exports), which encompasses such sectors as hotels and lodging places, equipment rental and leasing, computer and data-processing services, doctors and dentists, legal services, etc.

Table 3.46

Dependency Characteristics by Major Sector (Apalachicola National Forest)
(Percent)

Major Sector	Total Exports
Agricultural, Fisheries, and Forestry	2.81
Construction	0.01
Finance, Insurance, and Real Estate	16.26
Government Enterprises	0.97
Manufacturing	13.67
Mining	0.07
Other Nonindustry	2.54
Primary Wood Manufacturing	2.67
Secondary Wood Manufacturing	0.34
Services	44.38
Transportation, Communication, and Utilities	6.08
Wholesale and Retail Trade	9.15

A total of 23 sectors have more than 1 percent of the total exports, and only 5 sectors have more than 5 percent: business associations, eating and drinking establishments, hospitals, legal services, and real estate. A summary of these sectors is shown in Table 3.47.

Table 3.47

Economic Dependency by Major Sector (Apalachicola National Forest)
(Percent)

Major Sector	Total Exports
Advertising	2.99
Automobile Rental and Leasing	1.96
Automobile Repair and Services	2.79
Banking	1.41
Business Associations	5.12
Colleges, Universities, and Schools	1.94
Communications, Except Radio and Television	4.97
Doctor and Dentists	3.68
Eating and Drinking	6.77
Engineering and Architectural Services	1.38
Explosives	1.28
Forestry Products	1.41
Hospitals	10.20
Industrial and Fluid Valves	1.09
Insurance Agents and Brokers	3.77
Legal Services	6.46
Logging Camps and Logging Contractors	2.08
Management and Consulting Services	1.62
Other Medical and Health Services	2.22
Other Nonindustry	2.43
Owner-occupied Dwellings	4.79
Prepared Fresh or Frozen Fish or Seafood	1.45
Real Estate	5.78

From 1986 through 1995, the unemployment rate dropped in all affected counties, as well as in the United States and Florida. Liberty County experienced the greatest decline in

the unemployment rate during the period. All of the affected counties have an unemployment rate below the state and national average (Table 3.48).

Table 3.48

Unemployment Rate, 1986-95
(Apalachicola National Forest)
(Percent)

Year	United States	State of Florida	Franklin County	Leon County	Liberty County	Wakulla County
1986	6.9	5.7	7.1	3.6	6.0	4.5
1987	6.1	5.3	5.2	3.7	6.0	5.0
1988	5.4	5.0	5.5	3.4	5.9	4.7
1989	5.2	5.6	6.3	4.0	3.9	5.3
1990	5.4	5.9	5.9	3.8	3.6	4.9
1991	6.6	7.3	5.2	3.9	5.0	6.0
1992	7.3	8.2	5.2	4.0	4.7	5.8
1993	6.7	7.0	4.2	3.9	4.4	4.5
1994	6.1	6.6	4.4	4.0	4.2	4.7
1995	5.6	5.5	4.2	2.8	2.2	4.3

Sources: *1996 Florida Statistical Abstract*, Table 6.11; *1993 Florida Statistical Abstract*, Table 6.10; *1990 Florida Statistical Abstract,* Table 6.10; and *1988 Florida Statistical Abstract,* Table 6.10 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Franklin County and Liberty County experienced a substantial increase in gross sales from 1986 through 1995. The increase was more than twice the state average. Leon County's and Wakulla County's gross sales increased at a rate slightly lower than the state average (Table 3.49).

Table 3.49

Gross Sales, 1986 and 1995
(Apalachicola National Forest)
(Thousands of Dollars)

	1986	1995	Percentage of Change
State of Florida	$223,601,586	$423,309,074	89.3
Franklin County	$50,446	$181,385	259.6
Leon County	$2,366,360	$4,349,475	83.8
Liberty County	$20,634	$63,558	208.0
Wakulla County	$75,319	$132,186	75.5

Sources: *1996 Florida Statistical Abstract*, Table 16.82 and *1988 Florida Statistical Abstract,* Table 16.82 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Federal government expenditures in the affected counties increased at a rate greater than the state average from 1986 through 1994. The greatest increase was in Leon County and Wakulla County, followed by Liberty County and Franklin County, respectively (Table 3.50).

Table 3.50

Federal Government Expenditure, 1986 and 1994
(Apalachicola National Forest)
(Thousands of Dollars)

	1986	1994	Percentage of Change
State of Florida	$41,461,073	$75,005,214	80.9
Franklin County	$22,649	$42,707	88.6
Leon County	$884,614	$2,287,757	158.6
Liberty County	$10,352	$24,274	134.5
Wakulla County	$47,628	$121,932	156.0

Sources: *1996 Florida Statistical Abstract*, Table 23.08 and *1988 Florida Statistical Abstract,* Table 23.08 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

State funds to local governments decreased in all counties, except Leon County, from 1986 through 1994 (Table 3.51).

Table 3.51

State Funds to Local Government, 1986 and 1994
(Apalachicola National Forest)
(Thousands of Dollars)

	1986	1994	Percentage of Change
State of Florida	$717,575	$1,474,367	105.5
Franklin County	$1,375	$979	-28.8
Leon County	$9,401	$21,971	133.7
Liberty County	$1,234	$570	-53.8
Wakulla County	$1,445	$1,075	-25.6

Sources: *1996 Florida Statistical Abstract*, Table 23.48 and *1988 Florida Statistical Abstract,* Table 23.48 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

The price level index measures the relative cost of living for counties within the state. From 1987 through 1995, all affected counties experienced an increase in the price level index. The counties are ranked in the middle of the 67 counties in the state, from 19 to 41. Liberty County has the lowest index, and Leon County the highest index (Table 3.52).

Table 3.52

Price Level Index, 1987 and 1995
(Apalachicola National Forest)

	1987		1995	
	Index	Rank	Index	Rank
Franklin County	93.00	46	95.91	25
Leon County	95.09	29	97.50	19
Liberty County	91.66	56	93.10	41
Wakulla County	94.35	32	95.56	28

Population weighted state average = 100

Sources: *1996 Florida Statistical Abstract*, Table 24.80 and *1988 Florida Statistical Abstract,* Table 24.80 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Ocala National Forest

Human Dimensions

Someone characterized the Ocala NF as the finest snowbird habitat in all of the South. The snowbird this individual was referring to was the northern vacationer coming to Florida to avoid the harsh winters at home. This migration has been going on since the early days of the railroad.

Central Florida has a diverse offering of vacation experiences particularly after the arrival of theme parks such as Disney World and Busch Gardens. Even before these parks were mere dreams, central Florida attracted large numbers of visitors to view its many beautiful lakes, rivers, and crystal-clear springs. In fact, vacationers liked the environment so much they returned to stay permanently.

After many years of immigration, central Florida has become a large suburban region with Orlando as its largest city. Orlando is surrounded by rural towns that are progressively being transformed into satellite communities of this growing megalopolis, with most of the 1,000 new residents that Florida receives daily settling in this region. The Ocala NF is only 50 miles from downtown Orlando, close enough to be considered a suburban forest. New subdivisions spring up regularly near this forest. These new communities with their need for utilities, roads, water, and waste disposal add a complexity to forest management.

While central Florida's growing population is using this forest year-round for such activities as fishing, picnicking, and swimming, the winter months are when nonresidents fill the campgrounds. In the heat of summer, locals reclaim their favorite fishing and swimming sites. This has been the pattern of use for many years, but the picture is changing.

The cultural climate is varied, but on a seasonal basis one can see visitation favoring one group more strongly than others. In addition to this cultural-use pattern, special-interest groups compete for their favorite parts of the forest in activities such as hunting deer with dogs, OHV riding, bicycle riding, and primitive camping.

Unlike the Apalachicola and Osceola NFs, the Ocala NF has three social frontiers. It is a suburban forest just 1 to 2 hours away from large population centers. It is also a backyard forest to the myriad of subdivisions located within and outside its borders. It is also a vacation forest to thousands of visitors who come year after year.

The Ocala NF area was one of the last fighting grounds between early 19th-century settlers and Seminoles. Several forts were located in this area, and Seminole villages and encampments are shown on historical maps. These are sites significant to the historical heritage of the Seminole. There are also many areas in the Ocala NF that were inhabited by other aboriginal populations for extended periods. Some of these have associated burial mounds or areas that are still considered sacred to living populations.

Geographics

The Ocala NF is in the physiographic region known as the Central Highlands. Vegetation is characterized by upland pine, sand pine scrub, and river swamps (Snedaker and Lugo, undated). The directly affected influence area for the Ocala NF is identified as Lake, Marion, and Putnam Counties. Indirectly affected counties include Alachua and Volusia (Official IMPLAN Map). Orlando, Florida's sixth largest city with 164,693 people (*96 Abstract*, Table 1.31), is within a 30-minute drive of this forest.

Demographics

The 1990 census showed a total population of 412,000 for Lake, Marion, and Putnam Counties (*96 Abstract*, Table 1.20). Ocala has a population of about 42,045. Eustis, in Lake County, has 12,856 people; and Palatka, in Putnam County, has 10,444. Other towns have about 7,000 or less (*96 Abstract*, Table 1.31). The median age for this area is 41.2, slightly older than the state median age of 37.8. This central part of Florida, where the weather is consistently warm, attracts more retirees. About 20-30 percent of the population is over age 65 (*96 Abstract*, Table 1.36).

The affected counties, except Putnam County, experienced an estimated population increase higher than the state average from 1986 through 1995. Lake County experienced the greatest increase in population for the period (Table 3.53).

Table 3.53

Estimated Population Growth, 1986 and 1995
(Ocala National Forest)
(Thousands)

	1986	1995	Percentage of Change
State of Florida	11,654	14,149	21
Lake County	131	177	35
Marion County	167	225	34
Putnam County	60	70	17

Source: *1996 Florida Statistical Abstract*, Table 1.20 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

The ethnic mix of the Ocala influence area is 80-90 percent white, 10-18 percent black, and 2-4 percent Hispanic. Asian and Native American populations comprise less than one-half of 1 percent, reflecting statewide percentages (*95 Abstract*, Table 1.26).

Because of the advent of retirement communities in the area and the buildup of infrastructures to support the amenities they demand, the Ocala NF influence area reports urban populations as: Lake County 43 percent, Marion County 40 percent, and Putnam County 16 percent (*95 Abstract*, Table 1.11).

Aid to families with dependent children increased by 46.4 percent statewide from 1986 through 1995. Putnam County experienced almost no increase in aid, Marion County experienced an 18.2-percent increase, and Lake County experienced an increase almost equal to the state average (Table 3.54).

Table 3.54

Aid to Families with Dependent Children, 1986-87 and 1994-95 (Ocala National Forest)

	1986-87	1994-95	Percentage of Change
State of Florida	$494,347	$723,843	46.4
Lake County	$5,792	$8,502	46.8
Marion County	$10,953	$12,947	18.2
Putnam County	$6,599	$6,634	0.5

Sources: *1996 Florida Statistical Abstract*, Table 7.18 and *1988 Florida Statistical Abstract*, Table 7.18 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Income and Education

Per capita personal income in 1994 was reported as $18,523 for Lake County, $16,777 for Marion County, and $14,187 for Putnam County. All are below the statewide per capita personal income of $21,767 (*96 Abstract*, Table 5.10). Median household income for all three counties was below the 1989 median (the last year for which figures were available) (*95 Abstract*, Table 5.58). The percent of family households below poverty level is 7-10 percent for Lake and Marion Counties and 14 percent for Putnam County (*95 Abstract*, Table 5.50).

Per capita personal income increased in all affected counties from 1986 through 1994. All affected counties increased at a rate slightly below the state and national average (Table 3.55).

Table 3.55

Per Capita Personal Income, 1986 and 1994 (Ocala National Forest)

	1986	1994	Percentage of Change
United States	$14,906	$21,696	45.6
State of Florida	$15,041	$21,767	44.7
Lake County	$13,889	$18,523	33.4
Marion County	$11,943	$16,777	40.5
Putnam County	$10,191	$14,187	39.2

Source: *1996 Florida Statistical Abstract*, Table 5.10 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Lake, Marion, and Putnam Counties are below the state's average of 75 percent of people over the age of 25 who have high school diplomas, averaging 65-70 percent. The percentage of residents holding bachelor's or graduate degrees is also less than the statewide average (*95 Abstract*, Table 4.01).

School funding increased in all counties from 1986 through 1994. Putnam County increased at a rate lower than the state average. Lake and Marion Counties increased at a rate near the state average (Table 3.56).

Table 3.56

Elementary and Secondary Schools, All Funds by Revenue Source
1986-87 and 1993-94 (Ocala National Forest)
(Thousands of Dollars)

	$/FTE	Federal	State	Local	Total	Percentage of Change
1986-87						
State of Florida	$3,879	$475,228	$3,581,688	$2,725,597	$6,782,513	—
Lake County	$3,550	$5,098	$45,751	$19,034	$69,883	—
Marion County	$3,679	$7,480	$59,780	$29,606	$96,866	—
Putnam County	$3,920	$4,015	$24,756	$14,178	$42,949	—
1993-94						
State of Florida	$5,464	$921,140	$6,158,618	$5,024,416	$12,104,174	78.5
Lake County	$5,296	$9,516	$70,772	$45,279	$125,567	79.7
Marion County	$5,079	$14,817	$104,383	$52,920	$172,120	77.7
Putnam County	$5,327	$6,823	$41,856	$18,409	$67,088	56.2

Sources: *1996 Florida Statistical Abstract*, Table 20.63 and *1988 Florida Statistical Abstract*, Table 20.63 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Employment/Economy

Table 3.57 shows diversity characteristics for employment, employee compensation, and total income by major sector for the study area. The economy of the area is concentrated in the services, manufacturing, wholesale and retail sales, and government enterprises sectors.

Table 3.57

Diversity Characteristics by Major Sector
(Ocala National Forest)
(Percent)

Major Sector	Total Employment	Total Employee Compensation	Total Income
Agricultural, Fisheries, and Forestry	6.18	2.51	5.03
Construction	9.33	9.35	11.15
Finance, Insurance, and Real Estate	6.09	5.16	9.18
Government Enterprises	14.74	19.14	13.34
Other Manufacturing	8.33	12.91	15.83
Other Nonindustry	.98	.38	.24
Primary Wood Manufacturing	.46	.70	.70
Secondary Wood Manufacturing	2.16	2.85	2.51
Services	24.87	23.70	21.69
Transportation, Communication, and Utilities	3.15	4.53	5.13
Wholesale and Retail Trade	23.86	18.59	14.69

Economic Dependency

The distribution of total exports for the three-county study area by major sector is shown in Table 3.58. The production of exports is heavily concentrated in the manufacturing sector.

Table 3.58

Dependency Characteristics by Major Sector
(Ocala National Forest)
(Percent)

Major Sector	Total Exports
Agricultural, Fisheries, and Forestry	6.30
Construction	1.87
Finance, Insurance, and Real Estate	14.61
Government Enterprises	1.36
Manufacturing	52.67
Mining	2.59
Other Nonindustry	2.31
Primary Wood Manufacturing	1.20
Secondary Wood Manufacturing	5.35
Services	5.46
Transportation, Communication, and Utilities	3.62
Wholesale and Retail Trade	3.81

A total of 20 sectors have more than 1 percent of the total exports, and only 4 sectors have more than 5 percent: frozen fruits, juices, and vegetables; sanitary paper products; motor homes; and real estate. A summary of these sectors is shown in Table 3.59.

Table 3.59

Economic Dependency by Major Sector
(Ocala National Forest)
(Percent)

Major Sector	Total Exports
Bags, Plastic	1.07
Banking	1.97
Canned Fruits and Vegetables	1.30
Communications, Except Radio and Television	2.56
Concrete Products, NEC	1.17
Dimension Stone	1.70
Doctor and Dentists	1.72
Frozen Fruits, Juices, and Vegetables	6.60
Greenhouse and Nursery Products	1.66
Insurance Agents and Brokers	1.27
Miscellaneous Livestock	1.10
Miscellaneous Plastics Products	2.19
Mobile Homes	2.47
Motor Homes	7.50
Other Nonindustry	2.31
Other Medical and Health Services	1.44
Owner-occupied Dwellings	4.55
Real Estate	6.76
Rubber and Plastics Hose and Belting	1.63
Sanitary Paper Products	15.57

NEC - not elsewhere classified

From 1986 through 1995, the unemployment rate dropped in all affected counties, as well as the United States and Florida. Putnam County experienced the greatest decline in the unemployment rate during the period. All of the affected counties have an unemployment rate near the state and national average (Table 3.60).

Table 3.60

Unemployment Rate, 1986-95
(Ocala National Forest)
(Percent)

Year	United States	State of Florida	Lake County	Marion County	Putnam County
1986	6.9	5.7	7.7	5.9	7.9
1987	6.1	5.3	6.5	5.9	7.9
1988	5.4	5.0	5.5	5.7	7.1
1989	5.2	5.6	6.2	6.0	7.5
1990	5.4	5.9	7.9	6.9	6.9
1991	6.6	7.3	8.9	8.6	7.8
1992	7.3	8.2	10.1	8.6	8.9
1993	6.7	7.0	6.9	7.9	7.4
1994	6.1	6.6	6.6	7.3	7.0
1995	5.6	5.5	5.4	5.4	5.1

Sources: *1996 Florida Statistical Abstract*, Table 6.11; *1993 Florida Statistical Abstract*, Table 6.10; *1990 Florida Statistical Abstract,* Table 6.10; and *1988 Florida Statistical Abstract,* Table 6.10 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Putnam County experienced a substantial increase in gross sales from 1986 through 1995. Lake County's and Marion County's gross sales increased at a rate slightly lower than the state average (Table 3.61).

Table 3.61

Gross Sales, 1986 and 1995
(Ocala National Forest)
(Thousands of Dollars)

	1986	1995	Percentage of Change
State of Florida	$223,601,586	$423,309,074	89.3
Lake County	$1,581,687	$2,751,042	73.9
Marion County	$2,729,897	$4,864,338	78.2
Putnam County	$629,375	$1,456,894	131.5

Sources: *1996 Florida Statistical Abstract*, Table 16.82 and *1988 Florida Statistical Abstract,* Table 16.82 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Federal government expenditures in the affected counties increased at a rate greater than the state average from 1986 through 1994. The greatest increase was in Marion County, followed by Lake County and Putnam County, respectively (Table 3.62).

Table 3.62

Federal Government Expenditures, 1986 and 1994
(Ocala National Forest)
(Thousands of Dollars)

	1986	1994	Percentage of Change
State of Florida	$41,461,073	$75,005,214	80.9
Lake County	$431,954	$863,213	99.8
Marion County	$445,605	$1,005,973	125.8
Putnam County	$144,059	$275,066	90.9

Sources: *1996 Florida Statistical Abstract*, Table 23.08 and *1988 Florida Statistical Abstract,* Table 23.08 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

State funds to local governments increased in all counties from 1986 to 1994. The increase was lower than the state average with Putnam County having the lowest increase (Table 3.63).

Table 3.63

State Funds to Local Government, 1986 and 1994
(Ocala National Forest)
(Thousands of Dollars)

	1986	1994	Percentage of Change
State of Florida	$717,575	$1,474,367	105.5
Lake County	$7,870	$13,910	76.7
Marion County	$12,103	$19,509	61.2
Putnam County	$3,986	$4,786	20.1

Sources: *1996 Florida Statistical Abstract*, Table 23.48 and *1988 Florida Statistical Abstract,* Table 23.48 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

The price level index measures the relative cost of living for counties within the state. From 1987 through 1995, all affected counties experienced a decrease in the price level index. The counties are ranked in the upper portion of the 67 counties in the state, from 37 to 50. Putnam County has the lowest index, and Lake County has the highest (Table 3.64).

Table 3.64

Price Level Index, 1987 and 1995
(Ocala National Forest)

	1987		1995	
	Index	Rank	Index	Rank
Lake County	95.05	30	94.68	37
Marion County	94.03	34	92.08	46
Putnam County	92.84	49	91.92	50

Population weighted state average = 100

Sources: *1996 Florida Statistical Abstract*, Table 24.80 and *1988 Florida Statistical Abstract,* Table 24.80 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Osceola National Forest

Human Dimensions

Although its cultural, scenic, and recreational amenities are inconspicuous from State Highway 90 and Interstate 10 (the two major travelways bisecting the forest), the Osceola NF provides a wealth of economic, aesthetic, and recreational opportunities to residents of its surrounding communities. Residents of Jacksonville, Lake City, Baker County, and Columbia County use the Osceola NF for their forest-related recreational experiences. While its pine flatwoods and wetlands are not unique to the rural environments surrounding many of their homes, this forest is their place of choice for boating, camping, and swimming. During the fall, local residents share the forest with many campers and hunters from other areas of the country.

Ocean Pond, with its 1,760 acres of water configured in an almost perfect circle, is the most imposing natural feature on the forest. Although physical cultural evidence indicated that aboriginal occupation of the Osceola NF dates very early in prehistory, local folklore relates that a Seminole village or encampment was once located in the vicinity of Ocean Pond. It receives most of the recreational use throughout the year. The Osceola NF is increasing in popularity with nonresident populations (outside a 50-mile radius), due in large part to an annual reenactment of a Civil War battle that takes place on the forest. This event attracts thousands of people from all across the country.

Although it is still considered a working forest, where timber, range, and wildlife management activities are commonly practiced, the forest is rapidly becoming a refuge for people seeking relief from expanding urban development. As time goes on, the Osceola NF may receive increasing pressure as a source of relief and enjoyment in people's lives. There are many economic opportunities associated with these health and recreation needs. The rural residents who have their livelihoods connected with the goods and services coming off forestlands may see more diverse employment opportunities developing with these amenity resources.

Geographics

The Osceola NF, located in the physiographic region known as Northern Highlands, is characterized by pine flatwoods, cypress swamps, and creek and bay swamps (USDA, *Soils and Physiography of the Osceola National Fores*t, undated). The directly affected influence area for the Osceola NF is identified as Baker and Columbia Counties. Indirectly affected counties include Duval and Nassau (Official IMPLAN Map).

Demographics

According to the 1990 census, the directly affected area had a population of 61,100 (*96 Abstract*, Table 1.20). Jacksonville has a population of 635,230 *(96 Abstract*, Table 1.31). Jacksonville lies 40 miles east of the Osceola NF. Statewide, the median age of the population was reported as 37.8. For the directly affected area around the Osceola NF, the median age is slightly lower at 31.7. Both counties have 12 percent or less of their population over age 65 (*96 Abstract*, Table 1.36).

The population of this area is predominantly white with less than 20 percent black. Asian, Hispanic, and Native American populations are less than 1-2 percent in all counties (*95 Abstract*, Table 1.26).

Baker and Columbia Counties mainly have rural populations, 80 percent and 70 percent, respectively (*95 Abstract*, Table 1.11).

The affected counties experienced an estimated population increase slightly lower than the state average from 1986 through 1995 (Table 3.65).

Table 3.65

Estimated Population Growth, 1986 and 1995
(Osceola National Forest)
(Thousands)

	1986	1995	Percentage of Change
State of Florida	11,654	14,149	21
Baker County	17	20	18
Columbia County	40	50	27

Source: *1996 Florida Statistical Abstract*, Table 1.20 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Aid to families with dependent children increased by 46.4 percent statewide from 1986 to 1995. Columbia County experienced almost no increase in aid, and Baker County experienced a 19.4-percent increase (Table 3.66).

Table 3.66

Aid to Families with Dependent Children, 1986-87 and 1994-95
(Osceola National Forest)
(Thousands of Dollars)

	1986-87	1994-95	Percentage of Change
State of Florida	$494,347	$723,843	46.4
Baker County	$1,178	$1,407	19.4
Columbia County	$3,773	$3,919	3.9

Sources: *1996 Florida Statistical Abstract*, Table 7.18 and *1988 Florida Statistical Abstract*, Table 7.18 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Income and Education

Per capita personal income for the Osceola NF direct influence area is below the statewide average of $21,767 (*96 Abstract*, Table 5.10).

Per capita personal income increased in all affected counties from 1986 through 1994. Columbia County increased at a rate slightly below the state and national average, and Baker County increased at a higher rate (Table 3.67).

Table 3.67

Per Capita Personal Income, 1986 and 1994
(Osceola National Forest)

	1986	1994	Percentage of Change
United States	$14,906	$21,696	45.6
State of Florida	$15,041	$21,767	44.7
Baker County	$9,819	$14,916	51.9
Columbia County	$10,409	$14,710	41.3

Source: *1996 Florida Statistical Abstract*, Table 5.10 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Florida's statewide median household income in 1989 was $32,212. Baker County (with a median household income of $28,252) and Columbia County (with $25,971) are below the state average (*96 Abstract*, Table 5.58).

About 64 percent of Baker County residents and 69 percent of Columbia County residents have high school diplomas (*95 Abstract*, Table 4.01). Statewide about 75 percent of the population has high school diplomas.

The state average percent of population with bachelors degrees is 11.9 percent. In Baker and Columbia Counties, where the Osceola NF lies, the percentage of those with bachelor's degrees is 3 percent and 6 percent, respectively (*95 Abstract*, Table 4.01).

School funding increased in Baker County and decreased in Columbia County from 1986 through 1994. Baker County increased at a rate lower than the state average (Table 3.68).

Table 3.68

Elementary and Secondary Schools, All Funds by Revenue Source 1986-87 and 1993-94 (Osceola National Forest)
(Thousands of Dollars)

	$/FTE*	Federal	State	Local	Total	Percentage of Change
1986-87						
State of Florida	$3,879	$475,228	$3,581,688	$2,725,597	$6,782,513	—
Baker County	$3,592	$1,054	$11,363	$1,460	$13,877	—
Columbia County	$3,410	$2,198	$20,715	$3,561	$26,474	—
1993-94						
State of Florida	$5,464	$921,140	$6,158,618	$5,024,416	$12,104,174	78.5
Baker County	$4,955	$1,901	$17,716	$3,197	$22,814	64.4
Columbia County	$5,532	$4,088	$3,660	$8,172	$15,920	-39.9

*full-time equivalency

Sources: *1996 Florida Statistical Abstract*, Table 20.63 and *1988 Florida Statistical Abstract*, Table 20.63 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Employment/Economy

Table 3.69 shows diversity characteristics for employment, employee compensation, and total income by major sector for the study area. The economy of the area is centered on Government enterprises, wholesale and retail trade, and services.

Table 3.69

Diversity Characteristics by Major Sector (Osceola National Forest)
(Percent)

Major Sector	Total Employment	Total Employee Compensation	Total Income
Agricultural, Fisheries, and Forestry	5.38	2.11	7.07
Construction	7.02	6.42	8.82
Finance, Insurance, and Real Estate	4.30	3.77	5.76
Government Enterprises	29.49	39.61	28.85
Other Manufacturing	2.85	3.71	3.52
Other Nonindustry	.77	.28	.20
Primary Wood Manufacturing	.74	.74	.92
Secondary Wood Manufacturing	3.31	3.80	3.91
Services	19.37	16.44	17.26
Transportation, Communication, and Utilities	3.44	5.79	7.90
Wholesale and Retail Trade	23.02	16.72	15.19

Economic Dependency

The production of exports is well distributed in six major sectors: manufacturing; agriculture, fisheries, and forestry; services; finance, insurance, and real estate; and transportation, communication, and utilities. The distribution of total exports for the two-county study area by major sector is shown in Table 3.70.

Table 3.70

Dependency Characteristics by Major Sector (Osceola National Forest)
(Percent)

Major Sector	Total Exports
Agricultural, Fisheries, and Forestry	14.66
Construction	0.25
Finance, Insurance, and Real Estate	10.71
Government Enterprises	0.69
Manufacturing	22.19
Mining	0.10
Other Nonindustry	2.91
Primary Wood Manufacturing	3.94
Secondary Wood Manufacturing	15.73
Services	13.90
Transportation, Communication, and Utilities	10.03
Wholesale and Retail Trade	6.35

A total of 23 sectors have more than 1 percent of the total exports, and only 3 sectors have more than 5 percent: aircraft, hospitals, and mobile homes. A summary of these sectors is shown in Table 3.71.

Table 3.71

Economic Dependency by Major Sector (Osceola National Forest)
(Percent)

Major Sector	Total Exports
Aircraft	10.60
Aircraft and Missile Equipment	1.34
Apparel Made form Purchased Materials	3.61
Automotive Dealers and Services	1.36
Banking	4.51
Construction Machinery and Equipment	1.05
Dairy Farm Products	2.37
Eating and Drinking	1.13
Food Stores	2.05
Forestry Products	1.53
Greenhouse and Nursery Products	2.04
Hospitals	8.97
Hotels and Lodging Places	1.06
Logging Camps and Logging Contractors	3.63
Meat Packing Plants	1.28
Mobile Homes	13.06
Motor Freight Transport and Warehousing	1.80
Other Nonindustry	2.91
Poultry and Eggs	3.53
Ready-mixed Concrete	1.27
Reconstituted Wood Products	1.26
Sanitary Services and Steam Supply	1.51
Vegetables	2.72

From 1986 through 1995, the unemployment rate dropped in the United States and Florida. Baker County experienced a slight increase during the period, while Columbia County decreased. Both affected counties have an unemployment rate near the state and national average (Table 3.72).

Table 3.72

Unemployment Rate, 1986-95
(Osceola National Forest)
(Percent)

Year	United States	Florida	Baker County	Columbia County
1986	6.9	5.7	5.0	8.2
1987	6.1	5.3	5.6	8.3
1988	5.4	5.0	5.8	7.4
1989	5.2	5.6	6.4	8.2
1990	5.4	5.9	6.5	8.3
1991	6.6	7.3	8.7	9.4
1992	7.3	8.2	9.3	10.2
1993	6.7	7.0	8.1	9.3
1994	6.1	6.6	6.0	8.3
1995	5.6	5.5	5.3	5.7

Sources: *1996 Florida Statistical Abstract*, Table 6.11; *1993 Florida Statistical Abstract*, Table 6.10; *1990 Florida Statistical Abstract,* Table 6.10; and *1988 Florida Statistical Abstract,* Table 6.10 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Both counties experienced an increase in gross sales from 1986 through 1995. Gross sales increased at a rate slightly lower than the state average in Baker County and slightly higher in Columbia County (Table 3.73).

Table 3.73

Gross Sales, 1986 and 1995
(Osceola National Forest)
(Thousands of Dollars)

	1986	1995	Percentage of Change
State of Florida	$223,601,586	$423,309,074	89.3
Baker County	$89,089	$160,024	79.6
Columbia County	$522,410	$1,044,140	99.9

Sources: *1996 Florida Statistical Abstract*, Table 16.82 and *1988 Florida Statistical Abstract,* Table 16.82 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Federal government expenditures in the affected counties increased at a rate greater than the state average from 1986 through 1994. The greatest increase was in Baker County (Table 3.74).

Table 3.74

Federal Government Expenditures, 1986 and 1994
(Osceola National Forest)
(Thousands of Dollars)

	1986	1994	Percentage of Change
State of Florida	$41,461,073	$75,005,214	80.9
Baker County	$24,840	$67,011	169.8
Columbia County	$109,388	$238,892	118.4

Sources: *1996 Florida Statistical Abstract*, Table 23.08 and *1988 Florida Statistical Abstract,* Table 23.08 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

State funds to local governments increased in Columbia County and decreased in Baker County from 1986 to 1994. The increase was lower than the state average in Columbia County (Table 3.75).

Table 3.75

State Funds to Local Government, 1986 and 1994
(Osceola National Forest)
(Thousands of Dollars)

	1986	1994	Percentage of Change
State of Florida	717,575	1,474,367	105.5
Baker County	1,501	1,426	-5.0
Columbia County	3,446	4,382	27.2

Sources: *1996 Florida Statistical Abstract*, Table 23.48 and *1988 Florida Statistical Abstract,* Table 23.48 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

The price level index measures the relative cost of living for counties within the state. From 1987 through 1995, the price level index changed very little in both counties. The counties are ranked in the upper portion of the 67 counties in the state, from 60 to 61 (Table 3.76).

Table 3.76

Price Level Index, 1987 and 1995
(Osceola National Forest)

	1987		1995	
	Index	Rank	Index	Rank
Baker County	90.2	62	90.2	61
Columbia County	91.0	59	90.9	60

Population weighted state average = 100
Sources: *1996 Florida Statistical Abstract*, Table 24.80 and *1988 Florida Statistical Abstract,* Table 24.80 (Bureau of Economic and Business Research, College of Business Administration, University Press of Florida).

Dependency on Forest Service Funds

Figure 3.16 shows the budget trends for *National Forests in Florida* from 1990 through 1995. During this period, budget allocations rose 5 percent. However, when adjusted for inflation, the allocations in reality decreased by 9 percent. Table 3.77 shows the receipts by activity on *National Forests in Florida* from 1986 to 1995. Counties containing national forest land receive 25 percent of these funds. Receipts have declined during this period from $5.1 million to $3.7 million. The greatest decrease is on the Apalachicola NF with a decline from $2.1 million to $254,000. The Osceola NF declined from $1.5 million to $370,000. The Ocala NF experienced an increase in receipts from $1.4 million to $3.1 million. Timber sale receipts comprised 84 percent of the total forest receipts, followed by land use (7%), recreation (8%), and minerals and grazing (1%) in 1995. Nationally, payments to counties from national forest receipts have declined from about $305 million in 1993 to about $255 million in 1996.

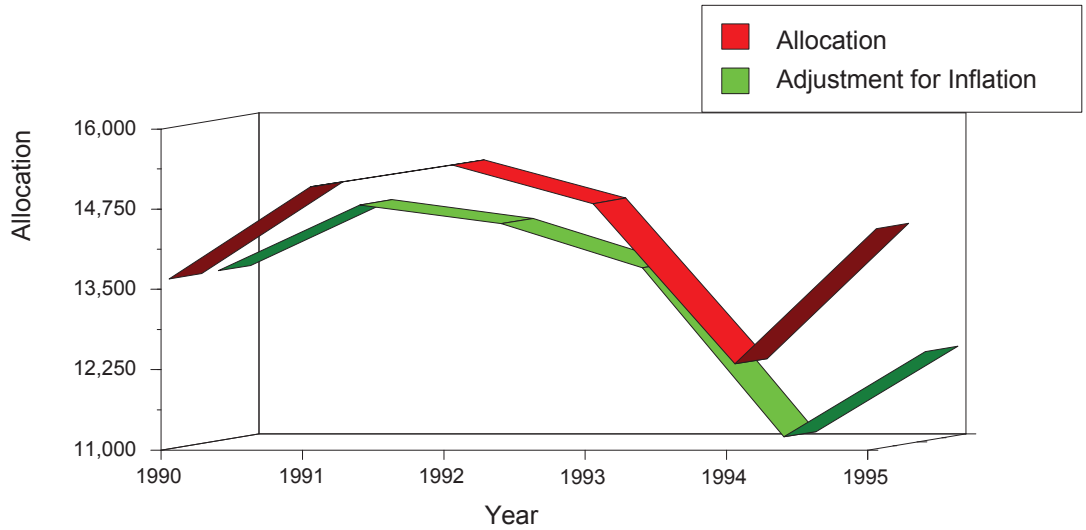


Figure 3.16. National Forests in Florida Budget Allocation.

Table 3.77

National Forests in Florida Receipts, 1986-95
(Thousands of Dollars)

	198	198	198	198	199	199	199	199	199	199	199	199
						Apalachicola National Forest						
Source												
Timber	$1,876	$2,087	$763	$2,061	$2,703	$1,226	$1,124	$1,144	$446	$204	$710	$228
Land Use	$75	$65	$73	$65	$56	$60	$56	$74	$94	$25	$64	$72
Recreation	$14	$13	$12	$14	$15	$10	$11	$6	$5	$11	$17	$5
Minerals	$205	$162	$81	$16	$28	$11	$3	$0	$0	$1	$1	$1
Grazing			$3								$2	$13
	$3	$3		$5	$6	$8	$9	$10	$4	$13		
Subtotal	**$2,173**	**$2,330**	**$932**	**$2,161**	**$2,808**	**$1,315**	**$1,203**	**$1,234**	**$549**	**$254**	**$794**	**$319**

Table 3.77 (cont.)

	198	198	198	198	199	199	199	199	199	199	199	199
						Ocala National Forest						
Source												
Timber	$1,026	$2,459	$1,833	$2,115	$2,579	$2,017	$2,947	$3,507	$1,878	$2,744	$1,299	$1,563
Land Use	$75	$75	$79	$78	$72	$308	$332	$357	$235	$33	$223	$231
Recreation	$371	$262	$234	$395	$305	$68	$66	$60	$271	$389	$290	$162
Minerals	$0	$0	$0	$5	$0	$0	$0	$0	$0	$0	$0	$0
Grazing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal	**$1,472**	**$2,796**	**$2,146**	**$2,593**	**$2,956**	**$2,393**	**$3,345**	**$3,924**	**$2,384**	**$3,166**	**$1,812**	**$1,956**
						Osceola National Forest						
Source												
Timber	$1,462	$2,142	$1,572	$861	$1,586	$1,245	$1,388	$1,052	$374	$323	$657	$98
Land Use	$5	$14	$14	$14	$16	$42	$40	$25	$37	$3	$31	$32
Recreation	$35	$33	$30	$47	$44	$20	$25	$32	$32	$41	$34	$48
Minerals	$11	$5	$0	$0	$0	$5	$3	$3	$1	$3	$3	$3
Grazing	$11	$10	$10	$9	$10	$10	$9	$12	$2	$0	$0	$0
Subtotal	**$1,524**	**$2,204**	**$1,626**	**$931**	**$1,656**	**$1,322**	**$1,465**	**$1,124**	**$446**	**$370**	**$725**	**$181**
TOTAL	**$5,169**	**$7,330**	**$4,704**	**$5,685**	**$7,420**	**$5,030**	**$6,013**	**$6,282**	**$3,379**	**$3,790**	**$3,331**	**$2,456**

Table 3.78 shows the annual payment to counties from the 25 percent fund from 1986 to 1997. This fund is allocated for schools and roads in the counties containing national forest land based on 25 percent of gross national forest receipts. Liberty County has the largest proportion (50%) of its land in national forest. Wakulla County has 44 percent of the county land in national forest, followed by Baker County with 27 percent, Marion County with 27 percent, Leon County with 24 percent, Columbia County with 18 percent, Lake County with 14 percent, Franklin County with 6 percent, and Putnam County with 5 percent. The factor affecting these payments most is timber receipts, which have historically accounted for approximately 90 percent of total forest receipts. The receipts that form the 25 percent fund payment basis are collected when the timber is harvested. Timber is harvested on average between 1 and 3 years from the time it is sold, so as prices rise there is a delayed effect on the 25 percent fund payments. Also, some years are wet and logging is restricted, which causes annual fluctuations in the 25 percent fund payments.

Twenty-five percent fund payments to counties within the Apalachicola NF (Franklin, Leon, Liberty, and Wakulla Counties) have declined from $782,900 in 1986 to $135,800 in 1997. Payments to counties within the Osceola NF (Baker and Columbia Counties) have declined from $539,600 in 1986 to $52,500 in 1997. Counties within the Ocala NF (Lake, Marion, and Putnam Counties) experienced an increase in receipts from $694,100 in 1986 to $808,700 in 1997. These figures have not been adjusted for inflation.

Table 3.78

Annual 25% Fund Payment to Counties, 1986-97
(Thousands of Dollars)

	198	198	198	198	199	199	199	199	199	199	199	1997
Apalachicola NF												
Franklin County	30.5	41.3	17.9	39.3	27.1	12.7	11.6	11.8	7.2	4.6	10.1	5.2
Leon County	146.3	197.8	85.9	188.1	129.8	60.7	55.5	56.8	34.5	18.7	48.7	25.1
Liberty County	372.2	503.3	218.7	478.7	330.2	154.4	141.1	145.1	88.1	50.0	124.5	64.2
Wakulla County	233.9	316.3	137.4	301.4	213.1	99.7	91.2	93.5	56.7	30.8	80.1	41.3

Table 3.78 (cont.)

	198	198	198	198	199	199	199	199	199	199	199	1997
Ocala NF												
Lake County	152.4	213.3	144.1	205.6	162.2	131.2	183.5	215.2	164.2	240.2	126.9	177.5
Marion County	498.8	698.1	471.4	672.7	531.2	430.9	601.3	705.4	537.9	786.9	415.7	581.4
Putnam County	42.9	60.0	40.5	57.8	45.5	36.8	51.5	60.5	46.1	67.4	35.6	49.8
Osceola NF												
Baker County	271.5	341.4	288.8	215.5	233.4	186.9	199.9	153.6	72.1	71.6	116.4	27.9
Columbia County	268.1	337.1	285.1	166.6	180.3	143.6	166.5	127.2	59.8	62.9	102.2	24.6
Choctawhatchee NF												
Okaloosa County	0.6	0.6	0.6	0.6	1.1	1.0	0.7	0.6	0.6	0.5	0.5	0.6
Santa Rosa County	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Walton County	0.0	0.1	0.1	0.1	0.3	0.3	0.6	0.6	0.6	0.5	0.5	0.6

Table 3.79 shows the annual payment in lieu of taxes to counties from 1986 through 1997. This payment is calculated independently from receipts to the national forests to compensate counties for lands taken out of the tax base.

Table 3.79

Annual Payment in Lieu of Taxes to Counties, 1986-97
(Thousands of Dollars)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Apalachicola NF												
Franklin County	2.1	2.1	2.2	2.2	7.4	2.2	2.8	10.1	10.6	11.1	15.6	15.3
Leon County	10.0	10.3	10.3	10.4	35.3	10.4	13.5	48.0	50.6	53.2	71.0	70.8
Liberty County	25.5	26.4	26.4	26.5	89.9	26.6	34.3	122.2	129.5	135.8	184.2	182.7
Wakulla County	16.1	16.6	16.6	16.7	56.8	17.2	22.2	79.1	83.4	87.6	116.9	116.5
Ocala NF												
Lake County	8.1	8.3	8.3	8.4	8.4	8.4	8.4	8.4	8.4	7.8	10.5	8.1
Marion County	26.7	27.6	27.6	27.9	27.9	27.9	27.9	27.9	27.9	25.9	37.4	26.8
Putnam County	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.4	4.7	2.5
Osceola NF												
Baker County	7.6	7.9	7.9	7.9	10.1	10.1	10.2	10.2	10.3	14.4	56.7	55.3
Columbia County	7.5	7.8	7.8	7.8	7.8	7.8	7.8	8.5	8.5	11.9	51.0	48.6

Choctawhatchee NF												
Okaloosa County	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9
Santa Rosa County	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Walton County	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2

Table 3.80 shows the combined 25 percent fund and payment in lieu of taxes to the counties from 1986 through 1997. Counties within the Ocala NF experienced about a 20-percent increase in these payments during the period. Counties within the Apalachicola NF experienced a reduction of about 40 percent for the same period. Counties within the Osceola NF experienced the greatest reduction, about 70 percent for the period. This reflects the reduction in timber harvests on the Apalachicola and Osceola NFs and a level timber harvest on the Ocala NF with an increase in prices.

Table 3.80

Total Payments to Counties, 1986-97
(Thousands of Dollars)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Apalachicola NF												
Franklin County	32.6	43.4	20.1	41.5	34.5	14.9	14.4	21.9	17.8	15.7	25.7	20.5
Leon County	156.3	208.1	96.2	198.5	165.1	71.1	69.0	104.8	85.1	71.9	119.7	95.9
Liberty County	397.7	529.7	245.1	505.2	420.1	181.0	175.4	267.3	217.6	185.8	308.7	247.0
Wakulla County	250.0	332.9	154.0	318.1	269.9	116.9	113.4	172.6	140.1	118.4	197.0	157.8
Ocala NF												
Lake County	160.5	221.6	152.4	214.0	170.6	139.6	191.9	223.6	172.6	248.0	137.4	185.6
Marion County	525.5	725.7	499.0	700.6	559.1	458.8	629.2	733.3	565.8	812.8	453.1	608.2
Putnam County	45.4	62.6	43.1	60.4	48.1	39.4	54.1	63.1	48.7	69.8	40.3	52.3
Osceola NF												
Baker County	279.1	349.3	296.7	223.4	243.5	197.0	210.1	163.8	82.4	86.0	173.1	83.2
Columbia County	275.6	344.9	292.9	174.4	188.1	151.4	174.3	135.7	68.3	74.8	153.2	73.2
Choctawhatchee NF												
Okaloosa County	1.0	1.0	1.0	1.0	1.5	1.4	1.1	1.0	1.0	0.9	0.9	1.4
Santa Rosa County	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2
Walton County	0.0	0.1	0.1	0.1	0.3	0.3	0.6	0.6	0.6	0.6	0.7	0.8

Half of the 25 percent fund to the counties is earmarked for education. Table 3.81 shows the relationship of the 25 percent fund to the county school budgets. During 1986-87, the 25 percent fund made up 6.29 percent of the Liberty County school budget and less than 2 percent of the other Apalachicola NF affected counties' budgets. During 1993-94, the 25 percent fund made up less than 1 percent of all school budgets in the Apalachicola NF affected areas.

Table 3.81

25% Fund Related to School Budgets
1986-87 and 1993-94
(Thousands of Dollars)

	Total Funds	25% Fund	Percent
Apalachicola NF			
1986-87			
Franklin County	$6,833	21	.31
Leon County	$107,455	99	.09
Liberty County	$4,007	252	6.29
Wakulla County	$10,330	158	1.53
1993-94			
Franklin County	$8,933	4	.04
Leon County	$188,881	17	.01
Liberty County	$6,473	44	.68
Wakulla County	$20,957	28	.13
Ocala NF			
1986-87			
Lake County	$69,883	107	.15
Marion County	$96,866	349	.36
Putnam County	$42,949	30	.07
1993-94			
Lake County	$125,567	82	.07
Marion County	$17,212	269	1.56
Putnam County	$67,088	23	.03

Table 3.81 (cont.)

	Total Funds	25% Fund	Percent
Osceola NF			
1986-87			
Baker County	$13,877	171	1.23
Columbia County	$26,474	169	.64
1993-94			
Baker County	$22,814	36	.16
Columbia County	$15,920	30	.19

During 1986-87, the 25 percent fund made up less than 1 percent of the Ocala NF affected counties' school budgets. During 1994-95, the 25 percent fund made up 1.56 percent of the Marion County school budget and less than 1 percent of the Putnam County and Lake County school budgets.

During 1986-87, the 25 percent fund made up about 1 percent of the Osceola NF affected counties' school budgets. During 1994-95, the 25 percent fund made up 0.16 percent of the Baker County school budget and 0.19 percent of the Columbia County school budget.

National forest management has a significant effect on the socioeconomic environment of Liberty County since half of its land base is in national forest. From 1986 to 1990, the annual average total payments to the county was $419,600. From 1991 to 1997, the average annual total payments was $226,100. One segment of the county that the decline in the 25 percent fund affects heavily is the county school budget. The 25 percent fund payments have historically made up a larger percentage of the school budget in Liberty County than other counties. The average 25 percent fund payment to Liberty County from 1986 through 1990 was $380,600. From 1991 through 1997, the average

payment was $109,600. Since half of the 25 percent fund is allocated to schools, the average payment to the schools from 1986 through 1990 was $190,300 and from 1991 through 1997, the average payment to the schools was $54,800. The average annual reduction in payments to the Liberty County schools from 1991 through 1997 was about $135,500 compared with the average annual payments from 1986 through 1990.

The average annual payment in lieu of taxes to Liberty County from 1986 through 1990 was $38,900. From 1991 through 1997, these payments increased to an annual average of $116,500. Unlike the 25 percent fund, these payments can be used at the discretion of the county.

The main reason for the decline in the 25 percent fund has been the reduction in timber harvest on the Apalachicola and Osceola NFs. Revised timber management guidelines for the RCW has affected significantly timber production on these forests. Not all the timber volume reductions can be attributed to RCW guidelines. Other factors affecting the timber harvest on these forests are an increased commitment to manage Federal land for protection of watersheds, wildlife habitat, threatened and endangered plants and animals, scenic values, and biodiversity. In 1992, the Chief of the Forest Service issued an ecosystem management policy that, among other things, called for a reduction in clearcutting on national forests. Nationally, there has been a reduction of approximately 65 percent in the amount of timber offered on national forest from 1987 through 1996.

Environmental Consequences

For many people, the way forests are managed can affect their lives, the way they earn a living, or their sense of well-being. Socioeconomic effects range from jobs and employment to recreation, life-styles, uses of the forest, and the spiritual and psychological benefits of having access to the natural world.

There are no federally recognized Indian tribes and/or Indian reservation trust lands on or in close proximity to any of the national forests in Florida. Proposed Federal actions included in this FEIS will not have any adverse impact on tribal government rights and/or tribal trust lands and resources. Consultation with tribal governments will continue regardless of alternative. However, since projects that result from particular alternatives might require more intensive consultation, some alternatives could indirectly impact tribal governments. Also, under some alternatives, depending on the specific area where activities take place, tribal interests could delay, alter, or halt the completion of activities.

Some effects on the socioeconomic environment would be the same for all alternatives. Smoke from prescribed burning would not be significantly different between alternatives. Beekeepers and honey production may be affected by the increase in burning and change in the season of burning from the past. Some recreational activities, such as fishing and picnicking, cross all ethnic and income lines and would not be greatly affected by the alternatives. Effects of the alternatives on human health and safety would not vary by alternative.

Many members of the public gather forest products such as aquatic plants, crookedwood, earthworms, firewood, lightered wood, palmetto berries, and pinecones. These activities contribute to the economy of local communities, as well as development of goodwill

between the forests and their communities. People who harvest these products range from commercial collectors to those seeking materials for hobbies and crafts. Migrant farm workers, for example, collect palmetto berries on the Ocala and Osceola NFs during the off-season for citrus, or plant trees as contract workers. Collecting earthworms or aquatic plants supplements other income. Collecting crookedwood, used as artificial trees, is a profitable commercial enterprise. These activities would not be affected by differences in the alternatives.

Forest recreation areas attract many tourists who use these areas. They spend money in local stores as well as at campgrounds, marinas, or swimming areas. These recreation areas contribute to the local economy through employment, taxes, purchases, and contract work. Revenues from recreation areas contribute to the total receipts returned to the counties. All the current recreation areas are retained through all alternatives except Silver Glen Springs, discussed in Alternative B.

Many of the counties near the Apalachicola NF are also near the Gulf of Mexico, and many individuals are employed in the fishing industry. The State of Florida recently imposed a ban on net fishing, resulting in many of the smaller fishing operations going out of business. Some counties are experiencing loss of jobs and income in both the forestry and fisheries industries. With both industries experiencing a loss of employment, this may result in a cumulative effect on the local economies, increasing unemployment and decreasing county budgets.
Response coefficients by activity for jobs and income were developed from IMPLAN to estimate the impacts on jobs and income for the alternatives. A more detailed explanation of the IMPLAN analysis is found in Appendix B.

Table 3.82 shows the estimated annual jobs and income, by forest, by alternative, per year, for the first period.

Table 3.82

Summary of Jobs and Income by Forest, by Alternative, per Year for the 1st Period

Alternative	Scenario per Output	Jobs	Income (MM$)
	Apalachicola National Forest		
A	Timber Processed	232	9
	25% Fund	36	1
	Recreation	352	8
	TOTAL	**620**	**18**
B	Timber Processed	276	11
	25% Fund	50	2
	Recreation	362	9
	TOTAL	**688**	**22**
C	Timber Processed	436	17
	25% Fund	83	2
	Recreation	353	8
	TOTAL	**872**	**27**
D	Timber Processed	206	8
	25% Fund	42	1
	Recreation	372	9
	TOTAL	**620**	**18**

E	Timber Processed	362	14
	25% Fund	65	2
	Recreation	362	9
	TOTAL	**789**	**25**
	Ocala National Forest		
A	Timber Processed	954	36
	25% Fund	77	2
	Recreation	1,859	45
	TOTAL	**2,890**	**83**
B	Timber Processed	651	25
	25% Fund	56	2
	Recreation	1,862	45
	TOTAL	**2,569**	**72**
C	Timber Processed	874	33
	25% Fund	91	3
	Recreation	1,857	45
	TOTAL	**2,822**	**81**
D	Timber Processed	627	24
	25% Fund	58	2
	Recreation	1,873	46
	TOTAL	**2,558**	**72**
E	Timber Processed	740	28
	25% Fund	62	2
	Recreation	1,868	46
	TOTAL	**2,670**	**76**

MM$ - millions of dollars

Table 3.82 (cont.)

Alternative	Scenario per Output	Jobs	Income (MM$)
	Osceola National Forest		
A	Timber Processed	48	4
	25% Fund	4	.1
	Recreation	460	11
	TOTAL	**512**	**15**
B	Timber Processed	50	2
	25% Fund	6	.2
	Recreation	463	12
	TOTAL	**519**	**14**
C	Timber Processed	168	9
	25% Fund	28	1
	Recreation	460	11
	TOTAL	**656**	**21**
D	Timber Processed	61	3
	25% Fund	8	.2
	Recreation	476	12
	TOTAL	**545**	**15**
E	Timber Processed	142	6
	25% Fund	16	.4
	Recreation	462	12
	TOTAL	**620**	**18**

MM$ - millions of dollars

Table 3.83 shows the estimated change in annual income, estimated change in annual employment, estimated annual payment to counties, and estimated annual budget by alternative for the combined forests for the first five periods. Income is the sum of wages, proprietors' income, rents, royalties, and dividends.

Table 3.83

Summary of Impacts on Jobs, Income, 25% Fund, and Budget

Alternative	Period 1	Period 2	Period 3	Period 4	Period 5
	Estimated Change in Annual Employment by Alternative (Jobs)				
A	Baseline*	+268	+612	+627	+652
B	-245	-62	+72	+43	+41
C	+329	+530	+930	+890	+974
D	-299	-43	+356	+298	+287
E	+57	+341	+587	+541	+663
	Estimated Change in Annual Income by Alternative (MM$)				
A	Baseline**	+9	+20	+20	+22
B	-9	-3	0	-2	-2
C	+13	+26	+33	+31	+34
D	-12	-3	+10	+8	+7
E	+2	+12	+19	+17	+22
	Estimated Annual 25% Fund to Counties by Alternative (MM$)				
A	2	3	3	3	3
B	2	2	2	2	2
C	3	4	4	4	4
D	2	2	2	3	3
E	2	2	3	3	3

*Baseline = 4,021 Baseline = $116 (MM$) MM$ - millions of dollars

Table 3.83 (cont.)

Alternative	Period 1	Period 2	Period 3	Period 4	Period 5
	Estimated Annual Budget by Alternative (MM$)				
A	14.8	15.7	17.0	16.9	16.8
B	17.2	17.3	17.4	17.5	17.6
C	19.9	20.9	18.0	20.9	21.2
D	16.4	16.8	18.0	18.0	18.1
E	19.0	19.2	20.1	20.3	20.6

MM$ - millions of dollars

Forest management variables used for these projections were timber harvest, 25 percent fund and recreation use. Recreation use includes hunting and fishing. Alternative A served as the baseline for comparison since it is the ``no action" alternative for revising the Forest Plan.

The jobs and income produced from recreation varied little by alternative. This is because recreation use varied little by alternative. The most significant variables contributing to the change in employment and income were timber and 25 percent fund.

Table 3.84 shows estimated benefits, costs, benefit/cost ratio, net benefits, and cumulative present net worth by alternative. All figures are in 1995 dollars. The benefits in Table 3.84 include market values and nonmarket assigned values, except for the maximum market PNW column. This includes only market values and costs exceed these values, resulting in a negative PNW. Market values include those values where the Forest Service receives money such as for timber, range, special uses, etc. Nonmarket values are assigned values for amenities such as wildlife and recreation.

Table 3.84

Estimated Benefits, Costs, Benefit/Cost Ratio, Net Benefits, and Cumulative Present Net Worth by Alternative
(Millions of Dollars)

	Alternatives					Maximum	Maximum
	A	B	C	D	E	PNW	Market PNW
Period 1							
Estimated Benefits	588	593	638	587	612	642	125
Costs	148	172	199	164	190	195	197
Benefit/Cost Ratio	3.97	3.45	3.21	3.58	3.22	3.29	0.63
Net Benefits	440	421	439	423	421	446	-72
Cumulative PNW	362	346	361	347	347	367	-59
Period 2							
Estimated Benefits	638	618	690	617	643	680	134
Costs	157	173	209	168	192	204	206
Benefit/Cost Ratio	4.06	3.57	3.30	3.67	3.35	3.33	0.65
Net Benefits	481	445	482	449	450	477	-70
Cumulative PNW	628	593	628	597	595	632	-98
Period 3							
Estimated Benefits	691	651	732	672	685	762	207
Costs	170	174	180	180	201	226	229
Benefit/Cost Ratio	4.06	3.74	4.07	3.73	3.41	3.37	0.9
Net Benefits	521	477	520	491	485	537	-23
Cumulative PNW	825	772	824	781	780	833	-107

PNW - present net worth

Table 3.84 (cont.)

	Alternatives					Maximum	Maximum
	A	B	C	D	E	PNW	Market PNW
Period 4							
Estimated Benefits	696	657	737	687	695	785	220
Costs	169	175	209	180	203	226	227
Benefit/Cost Ratio	4.12	3.75	3.53	3.82	3.42	3.47	0.97
Net Benefits	526	481	528	506	492	558	-6
Cumulative PNW	957	894	958	910	905	975	-108
Period 5							
Estimated Benefits	705	659	739	694	705	795	236
Costs	168	176	212	181	206	228	234
Benefit/Cost Ratio	4.20	3.74	3.49	3.83	3.42	3.49	1.01
Net Benefits	537	483	528	514	499	567	2
Cumulative PNW	1,050	977	1,048	997	990	1,071	-107

PNW - present net worth

Table 3.85 shows the estimated average annual 25 percent fund payments by alternative for each forest in the first 10-year planning period. This estimate is based on the assumption that all timber yields with be realized and that prices follow anticipated trends. All the alternatives show an increase in the 25 percent fund payments during the past 5 years. This is a result of the large acreage of plantations on the forests which will need thinning in the next 10 years. The average annual 25 percent fund payments from 1993 to 1997 (5 years) on the Apalachicola NF was $199,000, on the Ocala NF $842,000, on the Osceola NF $164,000.

Table 3.85

Estimated Average Annual 25% Fund by Alternative, by Forest, First 10-Year Period
(Millions of Dollars)

Alternative	Apalachicola NF	Ocala NF	Osceola NF	Total
A	537	1,090	61	1,688
B	753	792	91	1,636
C	1,248	1,297	418	2,963
D	621	827	116	1,564
E	971	882	243	2,096

Alternative A. This alternative ranks third in annual employment and income in the first period (*see* Table 3.82). This alternative has the highest PNW because it has the lowest costs (*see* Table 3.84). This alternative's lower cost is mainly the result of lower projected land acquisition funds. This alternative ranks as the third highest in total 25 percent fund payments, but it ranks last in 25 percent fund payments on the Apalachicola and Osceola NFs (*see* Table 3.85).

Forest management techniques would continue as currently practiced. Equipment and skills used for these practices are common in the area.

User conflicts—such as hunters versus hikers, horses versus bicycles, or motorized users versus quiet-seekers—would continue and increase as the level of use increases over time, as they continue to use the existing system of roads, trails, and travelways. The current policy of allowing cross-country travel by foot or vehicle would result in more user-created trails and travelways as users seek new experiences or settings. Remote sacred areas and aboriginal archeological sites could be exposed to more looting or vandalism and unintentional destruction from increased access. Some users engage in recreational activities that require a network of roads and OHV trails, such as hunting deer with dogs. This alternative would not affect those activities.

Alternative B. This alternative ranks fourth in employment and income (*see* Table 3.82) and last in PNW for the first period (*see* Table 3.84). This alternative ranks fourth in the total 25 percent fund payments (Table 3.85). This is the result of lower timber production in this alternative.

This alternative differs from Alternative A by moving toward a diversity of patch sizes in longleaf and slash pine. This would require an adaptive approach. Management practices would be different and people would need to adjust to the change. Equipment and skills may need to be adjusted to accommodate the larger portion of selective cutting practices. This may cause some apprehension among people in timber-related jobs and would require a period of adjustment and training. A diverse patch size structure may contribute to an enhanced feeling of well-being for forest visitors; having larger areas with a continuous forest canopy containing big trees may be more aesthetically appealing and may provide higher-quality recreation experiences.

Alternative B would require motorized vehicles to stay on open, numbered roads and designated trails. This would change some patterns of motorized use from the ability to travel cross-country in most areas on the forests. A change in access policy would require a period of adjustment for people accustomed to cross-country travel. Some users may perceive this change as a threat to their access to the forests. This alternative would prevent user-created roads and trails from developing at random across the landscape. Remote sacred areas and aboriginal archeological sites could be exposed to less looting or vandalism and unintentional destruction from increased access. As properly designed and planned trails are developed, user conflicts would be reduced and there would be ample opportunities for recreational OHV use. This alternative may affect people who hunt deer with dogs by closing/obliterating some roads and eliminating cross-country vehicle traffic.

This alternative would place Silver Glen Springs into a special interest area instead of a developed recreation site, as in the other alternatives. This may result in a loss of revenue from recreation receipts, if the area is no longer a fee area. Local economies are affected by the recreation potential of the forests. By designating Silver Glen Springs as a special interest area, the Forest Service would forgo future income from this fee area and from any improvements, such as a campground, that might be considered for this area.

Although no archeological or historical data exists to substantiate the presence of a succinct burial mound or area, this area is considered sacred to some Native Americans. Less development of the site would require less invasive archeological mitigation or disturbance of archeological remains from recreational developments. Native Americans who consider the area sacred also consider as offensive any archeological research that would substantiate or refute sacred status.

The increase in the number of areas listed as special interest areas, plus the addition of Clear Lake as wilderness, would increase recreational opportunities on the forests. Life-styles of people within the urban population of the cities closest to forests (Tallahassee, Jacksonville, and Ocala) are enhanced by having a national forest within an hour's drive to increase their recreation options. Alternative B may increase the types of recreation activities that urbanites favor—day hikes and bicycle trails, interpretive trails and nature study, visiting historic or archeological sites, swimming, and picnicking.

Alternative C. This alternative would have the highest timber production level (*see* Table 3.37), the greatest increase in employment and income (*see* Table 3.82) and 25 percent fund for the first period (*see* Table 3.85). This alternative has the second highest PNW (*see* Table 3.84). Timber management practices would be the same as Alternative A, with similar effects. The high PNW is most directly affected by the timber production. This alternative has the highest benefits, but high costs lower the net PNW.

Clear Lake WSA and Natural Area WSA would be recommended to be released to multiple use, thereby adding more acres to the suitable timber base than in any of the other alternatives. Alternative C also contains an area dedicated to the production of energy wood, where trees would be grown on short rotations to produce wood for energy production. Energy wood areas may allow communities to apply treated sewage as fertilizer.

This alternative is similar to Alternative A in allowing for cross-country motorized-vehicle travel and keeping roads and areas open to vehicles unless posted closed. Effects of this policy would be similar to Alternative A. Since the amount of wilderness acres does not increase, there would be no increase in opportunities to experience wilderness.

Alternative D. This alternative would have the lowest increase in employment and income in the first period (*see* Table 3.82) and the lowest 25 percent fund payments (*see* Table 3.85). The PNW of this alternative is equal to Alternative E, but less than Alternatives A and C and more than Alternative B (*see* Table 3.84). This alternative has benefits similar to Alternative A, but higher costs than Alternative A.

Timber management practices would span a wide range from current to an adaptive approach. Effects would be similar to Alternatives A and B.

This alternative would provide a range of recreation opportunities and settings, from the most primitive and semiprimitive to well-developed areas. On the Apalachicola and Osceola NFs, large blocks of land would be placed in the recreation DFCs, providing semiprimitive nonmotorized and motorized experiences as well as areas of low and moderately developed recreation sites. The entire area of the savannah ecosystem and several other areas across the Apalachicola, Ocala, and Osceola NFs would be placed in special interest areas. This would represent a significant amount of land taken out of the suitable timber base and result in this alternative having the least acres in the suitable timber base. This alternative would not provide areas for range allotments that would cause a loss in revenue from permit fees, but it would eliminate the costs of administering this program.

The access policy would be similar to Alternative B, with motorized vehicles restricted to open, numbered roads and designated trails except during hunting season when they would be permitted on unmarked travelways. Effects would be similar to Alternative B, but with less impact on those who hunt with dogs than Alternative B.

This alternative would add the most acreage to the wilderness system. Clear Lake, Natural Area, and Pinhook Swamp would be recommended for wilderness. Opportunities for wilderness experiences would be increased and a representative sample of upland pine sandhill ecosystem would be added. This may increase opportunities for the public to seek solitude, to experience primitive recreation, to test their outdoor skills, and to explore their spirituality and connections with the natural world. Adding to the wilderness system also may increase public awareness of the values associated with wilderness and increase their recognition that the forest contains special places that some people value for their spiritual or natural qualities. As with most wildernesses across the country, the majority of wilderness visitors are white, from both rural and urban areas (Cook and Borrie, 1995).

Similar to Alternative B, this alternative may enhance the life-styles of nearby populations by offering a greater number of acres in the recreation DFCs (4.1-4.5) and a greater range of recreation experiences, including trailless wilderness.

Alternative E. This alternative would have the second highest increase in employment and income (*see* Table 3.82). The PNW of this alternative is equal to Alternative D, but less than Alternatives A and C and more than Alternative B (*see* Table 3.84). This alternative has the second highest 25 percent fund payments (*see* Table 3.85). This alternative would be second highest in benefits due mainly to the timber harvest level. The PNW is reduced by the higher costs of uneven-aged management when compared to even-aged management in Alternative C.

Forest management practices would be similar to Alternative B, with similar effects. Management practices would be different than current and people would need to adjust to the change. Equipment and skills may need to be adjusted to accommodate the larger portion of selective cutting practices. This may cause some apprehension among people in timber-related jobs and would require a period of adjustment and training. A diverse patch size structure could contribute to an enhanced feeling of well-being for forest visitors; having larger areas with a continuous forest canopy containing big trees may be more aesthetically appealing and provide higher-quality recreation experiences.

This alternative would have an access policy similar to Alternatives B and D, where vehicles must stay on open, numbered roads and designated trails. However, this alternative also would allow motorized travel on unmarked travelways in portions of the forests. Effects of this policy are similar to Alternatives B, except more area would be available to travel on unmarked travelways. This would change some patterns of motorized use from the ability to travel cross-country in most areas on the forests. A change in access policy would require a period of adjustment for people accustomed to cross-country travel. Some users may perceive this change as a threat to their access to the forests. This alternative would prevent user-created roads and trails from developing at random across the landscape. Remote sacred areas and aboriginal archeological sites could be exposed to less looting or vandalism and unintentional destruction from increased access. As properly designed and planned trails are developed, user conflicts would be reduced, and there would be ample opportunities for recreational OHV use. This alternative may affect people who hunt deer with dogs by closing/obliterating some roads and eliminating cross-country vehicle traffic.

This alternative would provide a mix of existing and new special interest areas and recommend Clear Lake for wilderness status. The increase in the number of areas listed as special interest areas, plus the addition of Clear Lake as wilderness, would increase recreational opportunities on the forests. Life-styles of people within the urban population of the cities closest to forests (Tallahassee, Jacksonville, and Ocala) are enhanced by having a national forest within an hour's drive to increase their recreation options. Alternative E may increase the types of recreation activities that urbanites favor—day hikes and bicycle trails, interpretive trails and nature study, visiting historic or archeological sites, swimming, and picnicking. Opportunities for wilderness experiences would be increased, and a representative sample of upland pine sandhill ecosystem would be added. This may increase opportunities for the public to seek solitude, to experience primitive recreation, to test their outdoor skills, and to explore their spirituality and connections with the natural world. Adding to the wilderness system also may increase public awareness of the values associated with wilderness and increase their recognition

that the forest contains special places that some people value for their spiritual or natural qualities. As with most wildernesses across the country, the majority of wilderness visitors are white, from both rural and urban areas (Cook and Borrie, 1995).

In the bottomlands along the St. Johns River in the Ocala NF, there would be no hardwood/cypress timber production. Bottomlands along the Apalachicola and Ochlockonee Rivers on the Apalachicola NF would be placed in recreation DFCs where no commercial timber production would be allowed. No commercial timber production along the river bottomlands would result in less direct and indirect impacts to the aboriginal archeological sites concentrated in these areas, many of which have associated burial sites that are sacred. A large area of Impassable Bay and the interior portion of Pinhook Swamp would be placed in DFC 4.2 (minimum development, motorized) and DFC 1.1 (remote wetland), respectively. This represents a number of acres forestwide withdrawn from the suitable timber base, but not as many as in Alternatives B and D.

Alternative E would contain a DFC called the forest/urban interface (DFC 9.2). In this area, near the population centers of Tallahassee and Crawfordville, special consideration would be given to interactions between people and the forest environment. There would be more emphasis on trails and law enforcement. This alternative may result in an increased level of public awareness and acceptance of forest management activities. There would be increased opportunities for interpretation. An increased law enforcement presence may result in reduced user conflicts through trail management and increased opportunities for user-specific trails.

CHAPTER 4

PREPARERS

Core Interdisciplinary Team

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Interdisciplinary Team

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Special thanks to all personnel who helped with public meetings, with mailing documents to the public, and with the planning process.

CHAPTER 5

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CHAPTER 6

GLOSSARY

Acronyms

A.D. - anno Domini
AFB - Air Force Base
AMS - Analysis of the Management Situation
ASQ - allowable sale quantity
AUM - animal unit month

B.C. - before Christ
CCC - Civilian Conservation Corps
CCF - hundred cubic feet
CEQ - Council on Environmental Quality
CFR - Code of Federal Regulations
CFS - cubic feet per second
CISC - Continuous Inventory of Stand Conditions

DBH - diameter at breast height
DEIS - Draft Environmental Impact Statement
DFC - desired future condition

EPA - Environmental Protection Agency

FEIS - Final Environmental Impact Statement
FH - Forest Highway
FNST - Florida National Scenic Trail
FR - Forest Road
FSH - Forest Service Handbook
FSM - Forest Service Manual
FY - fiscal year

GIS - Geographic Information System

HMA - habitat management area

IPM - integrated pest management

LE - law enforcement
LTA - landtype association
LTSYC - long-term sustained-yield capacity

M$ - thousands of dollars
M - thousand
MA - management area
MAUM - thousand animal unit month
MBF - thousand board feet
MCF - thousand cubic feet
MIL - management intensity level
MIS - management indicator species
MM$ - millions of dollars
MMCF - million cubic feet
MMRVD - million recreation visitor-day
MOU - Memorandum of Understanding
MRVD - thousand recreation visitor-day
MWFUD - thousand wildlife and fish user-day

NEPA - National Environmental Policy Act
NF - National Forest
NFMA - National Forest Management Act
NWPS - National Wilderness Preservation System

O&M - Operations and Maintenance
OFW - Outstanding Florida Water
OHV - off-highway vehicle

PAOT - persons-at-one-time

PETS - proposed, endangered, threatened, or sensitive species
PL - Public Law
PNW - present net worth

RARE - Roadless Area Review and Evaluation
RARE II - the second Roadless Area Review and Evaluation
RCW - red-cockaded woodpecker
RCW EIS - *Record of Decision, Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region*
RD - ranger district
RIM - Recreation Information Management
RNA - research natural area
ROD - Record of Decision
ROS - Recreation Opportunity Spectrum
RPA - Resources Planning Act
RVD - recreation visitor-day

SCORP - State Comprehensive Outdoor Recreation Plan
SH - State Highway

T&E - threatened and endangered
TSPIRS - Timber Sale Program Information Reporting System

USC - United States Code
USDA - U.S. Department of Agriculture
USDI - U.S. Department of Interior
USGS - U.S. Geological Survey

VQO - visual quality objective

WFUD - wildlife and fish user-day
WSA - wilderness study area

Definitions

A

acre-foot. A measurement of water volume, equal to the amount of water that would cover 1 acre to a depth of 1 foot, specifically 43,560 cubic feet or 325,851 gallons.

active cluster. A specific red-cockaded woodpecker (RCW) cluster that is occupied in a given survey year. A cluster is determined to be active when there are nesting or roosting RCW present, or when one or more cavity trees exhibit fresh pitch wells and resin flow, reddish under-bark appearance, and/or fresh chipping is present at the cavity entrance.

adaptive management. The process of implementing policy decisions as scientifically driven management experiments that test predictions and assumptions in management plans, and using the resulting information to improve the plans.

administratively withdrawn. Forestland that is capable and available for timber production but is not managed for timber production under sustained-yield principles because of long-term allocations made prior to this planning effort; experimental forests and developed recreation sites are normally included under this designation.

age class. One of the intervals into which the age range of trees are divided for classification or use.

air quality standard. The prescribed level of pollutants in the air that cannot be exceeded legally during a specified time in a specified geographical area.

allocation. The assignment of management prescriptions to particular land areas to achieve the goals and objectives of an alternative.

allowable sale quantity (ASQ). The maximum quantity of timber that may be sold from the area of suitable land covered by the Forest Plan for a period specified by the Forest Plan. This quantity is usually expressed on an annual basis as the ``average annual allowable sale quantity."

alluvial. Clay, silt, sand, gravel, or similar detrital material deposited by running water, such as soil formed in floodplains.

alternative. A mix of desired future conditions applied to specific land areas to achieve a set of goals and objectives. The alternative provides management direction for the proposed project.

AMS. *See* Analysis of the Management Situation.

analysis area. A delineated area of land subject to analysis of (1) responses to proposed management practices in the production, enhancement, or maintenance of forest and rangeland outputs and environmental quality objectives and (2) economic and social impacts.

Analysis of the Management Situation (AMS). A study indicating the ability of the planning area to supply goods and services in response to society's demand for those goods and services.

animal unit month (AUM). The quantity of forage required by one mature cow and her calf (or the equivalent, in sheep or horses, for instance) for one month; 682 pounds of air-dry forage.

arterial road. A road that provides service to large areas and usually connects with public highways or other forest arterial roads to form an integrated network of primary travel routes.

artificial regeneration. Renewal of a tree crop by direct seeding or by planting seedlings or cuttings.

ASQ. *See* allowable sale quantity.

AUM. *See* animal unit month.

B

background. The visible landscape beyond 5 miles. Individual trees in the background are not visible but are blended into the total fabric of the stand.

basal area. The cross-sectional area (square feet at 4½ feet above ground level) of trees occupying an acre of land. Basal area is used to measure the density of a stand of trees.

BDQ method. Method used to identify a specific balanced uneven-aged stand structure where B = residual basal area, D = maximum diameter at breast height (DBH) to be left and Q = the factor that determines distribution of tree diameter.

bedding. Method of site preparation that plows, mixes, and loosely piles topsoil and litter into elevated beds. Normally done on wet site to improve soil drainage.

benchmark. An analysis reference point of the maximum physical/biological capability to produce a resource yield from forestlands while maintaining minimum legal requirement for production of other resources and maintenance of soil and water productivity. Benchmarks define the area within which alternatives can be formulated.

best management practice (BMP). A practice, or a combination of practices, that is determined to be the most effective and practical means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

biodiversity. The variety of life in an area, including the variety of gene pools, species, plant and animal communities, ecosystems, and the processes through which individual organisms interact with one another and their environments.

Biological Evaluation. A documented Forest Service review of its programs or activities in sufficient detail to determine how an action or proposed action may affect any proposed, endangered, threatened, or sensitive species.

BMP. *See* best management practice.

borrow. Excavation (as in borrow pit) of soil material for use as embankment, such as in road construction.

C

canopy. The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

cavity. A hole or hollow place in a tree.

CEQ. *See* Council on Environmental Quality.

CISC. *See* Continuous Inventory of Stand Conditions.

Class I area. An area designated for the most stringent protection from degradation of air quality.

Class II area. An area designated for moderate protection from air quality degradation.

Clean Air Act of 1970. This congressional act, along with the amendments passed in 1977 and 1990, provides authority for the Environmental Protection Agency to develop specific regulations controlling air pollution.

clearcutting. A method of regenerating an even-aged stand in which a new age class develops in a fully exposed microclimate after removal, in a single cutting, of all trees in the previous stand. Regeneration is from natural seeding, direct seeding, planted seedlings, and/or advance reproduction. Harvesting may be done in groups or patches (group or patch clearcutting), or in strips (strip clearcutting). In the clearcutting system, the management unit or stand in which regeneration, growth, and yield are regulated consists of the individual clearcut stand.

closed road. A road that is permanently or periodically closed to motorized vehicle travel. Public vehicular traffic is restricted except when operating under a permit or a contract, or in case of an emergency.

cluster. A site in which a group of red-cockaded woodpeckers nest or roost. It includes the total number and areas of cavity trees plus at least a 200-foot zone around them.

Coastal Zone Management Act of 1972. This act established a voluntary program for states and territories to develop programs and policies that regulate land uses, water uses, and coastal development for the protection and management of coastal resources.

collector road. A road that serves smaller land areas than arterial roads and is usually connected to an arterial road or public highway.

commercial forestlands. Lands capable of producing at least 20 cubic feet of wood per acre per year.

compartment. A unit of forest area delineated for purposes of orientation, administration, and silvicultural operations; it is usually identified on the ground by physical boundaries and consists of a collection of contiguous stands of timber and other vegetation.

constraints. Limitations—things that cannot be done or things that must be done.

Continuous Inventory of Stand Conditions (CISC). A system that continuously reflects an up-to-date description of timber stands. It tells what and when actions are planned for stands and gives some information about actions that have taken place. CISC is also the name of the data base management computer system used for the storage and retrieval of CISC data.

corridor. A strip of land identified for the present or future location of transportation or utility rights-of-way within its boundaries. Also, the strip of land within the boundary of wild and scenic rivers.

Council on Environmental Quality (CEQ). An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effect

on the environment, conducts environmental studies, and advises the President on environmental matters.

cross-country travel. Land travel through the forest that does not occur on an open, numbered road, a designated trail, or an unmarked travelway.

crown. The part of a tree bearing live branches and foliage.

cultural resource inventory. The archeological survey of areas to locate unrecorded heritage resources and identify known cultural resources. Inventory is not considered complete until a report is written about the findings, recommendations are made to the State Historic Preservation Officer (SHPO), and SHPO's concurrence is obtained.

current management. Management of the national forests in Florida under the existing Forest Plan, approved in 1986, as amended.

D

DBH. *See* diameter at breast height.

DEIS. *See* Draft Environmental Impact Statement.

demand. The amount of output that users are willing to take at a specific price, time period, and condition of sale.

designated trail. A trail wholly or partly within or adjacent to and serving a part of the National Forest System that has been included in the forest development trail system plan.

desired future condition (DFC). An expression of resource goals that have been set for a unit of land. It is written as a narrative description of the landscape as it will appear when the goals set for it have been achieved. It includes a description of physical and biological processes, the environmental setting, and the human experience.

developed recreation. Recreation that requires facilities and results in concentrated use of an area, for example, campgrounds and picnic areas.

DFC. *See* desired future condition.

diameter at breast height (DBH). A tree's diameter measured approximately 4 feet, 6 inches above the ground.

dispersed recreation. Recreation outside of developed recreational facilities, for example, hiking and driving for pleasure.

disturbance. A discrete event, either natural or human induced, that causes a change in the existing condition of an ecological system.

diverse patch size structure. A forest structure that contains a wide range of patch sizes from ¼ to 80 acres across the landscape.

diversity. The distribution and abundance of different plant and animal communities and species within an area.

D(max). The maximum diameter set when determining the target stand diameter distributions for selection management.

Draft Environmental Impact Statement (DEIS). A draft version of the Environmental Impact Statement that must follow the requirements of National Environmental Policy Act (NEPA), CEQ guidelines, and directives of the agency responsible for the project proposal.

E

early successional stage. The biotic community that develops immediately after the removal or destruction of vegetation in an area.

ecological classification system. A hierarchical system used to help organize and coordinate the classification of ecological types and ecological units and to make comparisons. Classification is ecologically based and integrates existing resource data such as climate, topography, geology, soil, hydrology, and vegetation. The system includes many levels (from the top-down approach): domain, division, province, section, subsection, landtype, landtype association, landtype phase, and site.

ecosystem. An association of interactive organisms and their environment perceived as a single entity.

EIS. *See* Environmental Impact Statement.

eligible. An ``eligible'' site that meets the National Register criteria for inclusion in the National Register of Historic Places. Eligible sites are protected by Section 160 of the National Historic Preservation Act.

endangered species. Any species of animal or plant that is in danger of extinction, as identified by the Secretary of the Interior as endangered in accordance with the Endangered Species Act of 1973.

Endangered Species Act. A law requiring Federal agencies to conserve endangered and threatened species. It strictly prohibits any person from harassing or harming any listed species.

Environmental Assessment. A concise public document, for which a Federal agency is responsible, that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact. It is to aid an agency's compliance with NEPA when no environmental impact statement is necessary. It facilitates preparation of a statement when one is necessary. It shall include brief discussion of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.

Environmental Impact Statement (EIS). A formal document that must follow the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the project proposal.

evaluation/evaluate. The process of determining the significance of a heritage resource. This usually involves subsurface archeological testing and sometimes involves excavation as well.

even-aged management. The combination of actions that results in the creation of stands in which trees of essentially the same age grow together. Clearcut, shelterwood, and seed-tree cutting methods produce even-aged stands.

even-aged stand. A stand of trees containing a single age class in which the range of tree ages is usually less than 20 percent of rotation.

F

Federal Register. The designated document that notifies the public of

Federal actions and includes items such as Notice of Intent, calls for public involvement, etc. This document also publishes the regulations needed to implement those Federal actions.

Final Environmental Impact Statement. The document that follows a Draft Environmental Impact Statement and contains analysis regarding forest programs that will have a significant impact on the environment.

fire intensity level. A term describing fire behavior based on flame length and heat generated by fire used in estimating fire suppression requirements and fire effects on resources.

fireline. A linear barrier used to stop prescribed burns and wildfires by the removal or treatment of fuels. Firelines may include the use of mechanically plowed lines, water, retardants, etc.

floodplain. Lowland and flat areas joining inland and coastal waters; the minimum area included that has a 1 percent or greater chance of flooding in any given year, commonly called the 100-year floodplain.

Florida National Scenic Trail (FNST). A long-distance trail providing both recreation and protection of nationally significant historic, natural, or cultural qualities. FNST will eventually extend 1,300 miles across Florida, linking greenways in wild and rural parts of the state.

Florida Wilderness Act of 1983. PL 98-430. This act designated certain lands on *National Forests in Florida* as wilderness and added to the National Wilderness Preservation System. These lands included Big Gum Swamp on the Osceola NF; Little Lake George, Juniper Prairie, Billies Bay, and Alexander Springs Wildernesses on the Ocala NF; and Mud Swamp/New River and an addition to the existing Bradwell Bay Wilderness on the Apalachicola NF.

foreground (visual distance zone). The part of a landscape that is nearest to the viewer, usually 0 to ½ mile from the viewer.

forest development road. A road wholly or partly within or adjacent to and serving a part of the National Forest System and which has been included in the forest development road system plan.

forestland. Land at least 10 percent occupied by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.

Forest Service Handbook (FSH). A handbook that provides detailed instructions for proceeding with specialized phases of programs or activities for Forest Service use.

Forest Service Manual (FSM). Agency manuals that provide direction for Forest Service activities.

forest/urban interface. An area characterized by an intermingling of residential private land with National Forest System land.

FORPLAN (FORest PLANning model). A linear programming model used to facilitate analysis of the alternatives.

FSH. *See* Forest Service Handbook.

FSM. *See* Forest Service Manual.

fuels. Living or dead plant material that will burn when weather conditions are correct.

G

Geographic Information System (GIS). An information processing technology to input, store, manipulate, analyze, and display spatial resource data to support the decision-making processes of an organization. Generally, an electronic medium for processing map information, typically used with manual processes to effect specific decisions about land base and its resources.

group selection. The cutting method that describes the silvicultural system in which trees are removed periodically in small groups resulting in openings that do not exceed two acres in size. This leads to the formation of a large uneven-aged stand in the form of a mosaic of age class groups.

growing stock volume. Volume (cubic feet) of solid wood in growing stock trees 5.0 inches DBH and larger, from a 1-foot stump to a minimum 4.0-inch top diameter, outside bark, on the central stem. Volume of solid wood in primary forks from the point of occurrence to a minimum 4.0-inch top diameter outside bark is included.

H

habitat capability. The estimated ability of an area, given existing or predicted habitat condition, to support a wildlife, fish, or plant population. It is stated in terms of potential population numbers.

habitat management area (HMA). The desired future demographic configuration of an RCW population. It is an area dedicated to RCW management.

head-month. A month of use or occupancy by an adult cow (five goats or sheep are considered the equivalent of one cow for fee purposes).

heritage resource. A site, structure, object, or group of sites or structures used or created by people in the past.

human dimension. The physical, emotional, mental, spiritual, cultural, social, and economic well-being of people and communities considered in ecosystem management. A component of ecosystem management that recognizes that people are part of ecosystems, that their pursuits of past, present, and future desires, needs, and values have and will continue to influence ecosystems.

hunt camp. A dispersed recreation site with rustic or minimum facilities normally used by hunters, etc.

I

ID. *See* Interdisciplinary Team**.**

IMPLAN (IMpact analysis PLANning). A computer-based system used by the Forest Service for constructing nonsurvey input-output models to measure economic input.

inactive cluster. A cluster site where there are no red-cockaded woodpeckers present and when none of the cavity trees exhibit active resin wells. Active resin wells are noted by recent pecking and clear, fresh resin flows from the well.

inholdings. Lands within the proclaimed boundaries of national forests that are

owned by some other agency, organization, or individual.

integrated pest management (IPM). A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategies includes the impact of the unregulated pest population on various resources values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and the ecology of the pest-host system and consist of a combination of tactics such as timber stand improvement plus selective use of pesticides. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable.

Interdisciplinary (ID) Team. A group of individuals with skills from different resources assembled to identify and resolve issues and problems.

irregular shelterwood harvest. A harvest designed to established regeneration under the protection of an overstory of seed trees. A portion of the seed trees remain indefinitely, leaving a two-aged stand.

K

key area. Areas of land that supplement specific habitat requirements (food, water, or cover).

L

landscape. An area composed of interacting ecosystems that are repeated because of geology, land form, soils, climate, biota, and human influences throughout the area. Landscapes are generally of a size, shape, and pattern that are determined by interacting ecosystems.

landtype. An intermediate level in the ecological classification system based on landform, natural vegetative communities, and soils.

landtype association (LTA). A group of landtypes. The landtypes in the association are sufficiently homogeneous to be considered as a whole for modeling the future outputs and effects of planned management activities. Landtype associations may not follow watershed boundaries and are defined on the basis of general similarities in climate, geology, landform, and vegetation.

linear programming. A mathematical technique for determining the effects of alternatives on resource allocation.

local road. Connects terminal facilities (harvest area recreation sites, etc.) with a collector or arterial road or public highway.

long-term sustained-yield capacity. The highest uniform wood yield from lands being managed for timber production that may be sustained, under a specified management intensity, consistent with multiple-use objectives.

LTA. *See* landtype association.

M

management area (MA). An area with similar management objectives and a common management prescription.

management direction. A statement of multiple-use and other goals and objectives, associated management prescriptions, and standards and guidelines for attaining them.

management emphasis. The multiple-use values to be featured or enhanced.

management indicator species (MIS). A particular type of plant or animal whose presence in a certain location or situation is a sign or symptom that particular environmental conditions are also present.

management intensity level (MIL). The MIL concept varies the level of management and protection to the survival needs of different RCW populations depending on their size and whether they are increasing or decreasing. The concept is similar to the way hospitals treat their patients based on the severity of their illness or injury: emergency, intensive care, general care, and outpatient services. It is based on research that indicates small RCW populations composed of widely distributed groups need more protection and different management than larger populations made up of more closely spaced groups.

management prescription. Management practices and intensity selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.

mast. Hard mast is the fruit or nuts of oak, beech, and pecan. Soft mast includes the fruits and berries of blackberry, dogwood, elderberry, grape, huckleberry, raspberry, and viburnums.

maximum modification. A visual quality objective meaning human activity may dominate the characteristic landscape.

middle ground (visual distance zone). The part of a scene or landscape that extends from ¼ to ½ mile to 3 to 5 miles from the observer.

midstory. A middle canopy layer of smaller trees that occurs under an overstory of trees. These trees are usually of a different species than the large trees and can grow in almost total shade.

minimum instreamflow. Minimum flow necessary to maintain a stream's character, quality, and usefulness to people as well as its dependent biota.

minimum level management. Management strategy that would meet only the basic statutory requirements of administering unavoidable, nondiscretionary land uses; preventing damage to adjoining lands of other ownerships; and protecting the life, health, and safety of incidental users.

minimum management requirements. Constraints or activities necessary to maintain viable wildlife populations and to prevent permanent impairment of the productivity of the land.

MIL. *See* management intensity level.

MIS. *See* management indicator species.

mitigation. Actions taken to avoid, reduce, eliminate, or rectify the impact of a management practice.

modification. A visual quality objective meaning human activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture.

multiple use. The management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to

provide sufficient latitude for periodic adjustments in the use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

N

National Environmental Policy Act (NEPA) of 1969. An act to declare a national policy that will encourage productive and enjoyable harmony between humankind and the environment, to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, to enrich the understanding of the ecological systems and natural resources important to the nation, and to establish a Council of Environmental Quality.

National Forest Management Act (NFMA) of 1976. Act passed as an amendment to the Forest and Rangeland Renewable Resources Planning Act, requiring the preparation of Regional Guides and Forest Plans and the preparation of regulations to guide them.

National Forest System. All national forest lands reserved or withdrawn from public domain of the United States; all national forest lands acquired through purchase, exchange, donation, or other means; National Grasslands and land utilization projects administered under Title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 U.S.C. 1010-1012), and other lands, waters, or interests which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system.

National Historic Preservation Act. An act that declares a national policy of historic preservation, expands the National Register of Historic Places to include cultural resources of state and local significance, establishes an Advisory Council on Historic Preservation, and provides procedures for Federal agencies to follow in the event a proposal may affect properties on or eligible to the National Register of Historic Places.

National Register of Historic Places. Listing maintained by the National Park Service of areas that have been designated as being of historical and archeological significance.

National Wild and Scenic Rivers System. Rivers with outstanding scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.

native vegetation. Indigenous species that is normally found as part of a particular ecosystem; a species that was present in a defined area prior to European settlement.

natural regeneration. Renewal of a tree crop by natural means, without planting seeds or seedlings.

NEPA. *See* National Environmental Policy Act.

net public benefit. Expression used to signify the overall long-term value to the

nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index. The maximization of net public benefits to be derived from management of units of the National Forest System is consistent with the principles of multiple use and sustained yield.

NFMA. *See* National Forest Management Act.

nondeclining yield. A timber flow constraint that ensures harvests in each period after the first will be greater than or equal to the harvest in the preceding period.

nonforest land. Lands that never have had or that are incapable of having 10 percent or more of the area occupied by forest trees; or lands previously having such cover and currently developed for nonforest use. Lands developed for nonforest use include areas for crops, improved pasture, residential or administrative areas improved roads of any width, and adjoining road clearing and power line clearing of any width.

numbered road. A road wholly or partly within or adjacent to and serving part of the National Forest System that has been included in the forest development road system plan. Numbered roads are inventoried by traffic service level A through D and are maintained on the Travel Inventory System data base.

O

objective function. The item to be maximized (or minimized) in the problem's solution.

off-highway vehicle (OHV). Any vehicle capable of traveling overland where no road exists.

off-site. A term referring to species not normally found on a certain site under natural conditions. An off-site species may have been placed on the site or may have encroached on the site because of a change in natural conditions of the site.

old-growth forest. Ecosystems distinguished by old trees and related structural attributes. Specific attributes vary according to forest type, climate, site conditions, and disturbance regime.

on-site. A term referring to species normally found on a site under natural conditions.

overstory. Trees that overtop other trees; the dominant forest canopy.

overstory removal. The final stage of harvest in the irregular shelterwood, shelterwood, or seed-tree methods where all or a portion of the overstory trees are removed to allow the understory to grow.

P

PAOT. *See* persons-at-one-time.

partial retention. A visual quality objective that in general means human activities may be evident but must remain subordinate to the characteristic landscape.

perennial stream. Stream that flows at least 90 percent of the time, based on long-term flow data and has the following characteristics: (1) water flows

continuously over the ground surface, not disappearing periodically into the channel bottom deposits of rock, gravel, or sand (this does not include flowing through debris dams of logs or leaves); (2) stream channel bottom is usually free of nonaquatic-type vegetation such as grasses and weeds; (3) aquatic insects or fish are present. A stream that flows at least 90 percent of the time is not classified as a perennial stream if this constancy of flow is due to increased water yield from timber harvest and if the stream returns to intermittent flows 1 to 5 years after the timber harvest.

period or **planning period.** One decade. The time interval within the planning horizon that is used to show incremental changes in yields, costs, effects, and benefits (36 CFR 219.3).

persons-at-one-time (PAOT). A recreation capacity measurement term indicating the number of people than can comfortably occupy or use a facility or area at one time.

PETS. An acronym for proposed, endangered, threatened, or sensitive plant or animal species for listing pursuant to the Endangered Species Act.

planning horizon. The time span corresponding to the Resources Planning Act planning periods. (In the case of this EIS this includes the years from 1995 to 2040.) The planning horizon is used for long-term comparisons of alternative outputs and effects as required by RPA and NFMA. To make these comparisons, we must assume that no change of direction occurs during the planning horizon. For this assumption to be true, it would require a plan to go through two, if not more, complete revisions with no significant changes in management direction.

preferred alternative. Alternative recommended for implementation as the Forest Plan.

prescribed fire. Fire ignited by the Forest Service, or cooperating personnel, that is burning under conditions specified in an approved plan to dispose of fuels, control unwanted vegetation, stimulate growth of desired vegetation, change successional stages, etc., to meet wildlife, recreation, wilderness, watershed, timber management, or ecological objectives.

prescription. A set of practices selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.

present net worth (PNW). The difference between the discounted worth (benefits) of all outputs to which monetary values or established market prices are assigned and the total discounted costs of managing the planning area.

preservation. A visual quality objective that allows for natural changes only.

primitive. A classification of the Recreation Opportunity Spectrum characterized by an essentially unmodified environment, where trails may be present, but structures are rare, and where probability of isolation from the sights and sounds of humans is extremely high.

protection (of heritage resources). Save or shield from loss, destruction, or injury for future appreciation and use.

public domain land. Original holdings of the United States that were never granted or conveyed to other jurisdictions or

reacquired by exchange for other public domain lands.

Q

q factor. The factor used to set the slope of the reverse-J curve used to define stand structure in uneven-aged management.

R

range allotment. The area designated for use by a prescribed number of livestock for a prescribed period of time. Though an entire ranger district may be divided into allotments, all land will not be grazed, because other uses, such as recreation or tree planting, may be more important at a given time.

ranger district (RD). Administrative subdivisions of the forest that are supervised by a District Ranger, who reports to the Forest Supervisor.

rare. Plant or animal species that are uncommon in a specific area. All endangered, threatened, and sensitive species can be considered rare, but the converse is not true.

RARE II (Roadless Area Review and Evaluation II). Forest Service's assessment of potential of roadless and undeveloped land areas within the national forest for potential wilderness areas.

RD. *See* ranger district.

Record of Decision (ROD). A document separate from, but associated with, an environmental impact statement that publicly and officially discloses the responsible official's decision on the alternative assessed in the environmental impact statement chosen to be implemented.

Recreation Information Management (RIM). An electronic system of storing recreation information such as condition and use of recreation resources on national forest lands.

Recreation Opportunity Spectrum (ROS). A land classification system that categorizes national forest land into six classes, each class being defined by its setting and by the probable recreation experiences and activities it affords.

recreation visitor-day (RVD). A unit of measure of recreation use reflecting any combination of people and hours in which the product is 12; for example, 1 person for 12 hours, 2 people for 6 hours, 12 people for 1 hour, etc.

recruitment cluster. A recruitment stand that has been provisioned with at least 4 artificial RCW cavities, either inserts or drilled cavities or a combination of both.

recruitment stand. A stand of trees at least 10 acres that is identified as potential nesting habitat required to meet the population goal on a compartment basis for RCWs. Recruitment stands are located between ¼ mile and ¾ mile from a cluster site. Foraging habitat is required for recruitment stands.

red-cockaded woodpecker group. Normally a breeding pair of RCWs, plus helpers, living as a family group. Group size can vary from a mated pair to as many as nine individuals, but averages about three birds. Occasionally, group size may be reduced to a single individual (usually a male). A single bird group is usually a temporary phenomenon, with either

successful mating or cluster abandonment occurring within a short period of time.

regeneration. The renewal of a tree crop, whether by natural or artificial means; also the young crop itself.

relict trees/relicts. A pine tree which is left over from the original forests that were harvested of high-quality RCW cavity trees; presence of red-heart fungus (rot or decay) at average cavity height, 14 inches DBH or larger, high ratios of heartwood to sapwood, and large, flattopped crowns with large limbs. Most of the RCW cavity trees in use are relicts.

replacement stand. A stand of trees at least 10 acres and within ½ mile of an RCW cluster site that is identified as replacement nesting habitat for the existing cluster.

research natural area (RNA). A physical and biological unit in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features.

Resources Planning Act (RPA). Forest and Rangeland Renewable Resources Planning Act of 1974; also refers to the national assessment and recommended program developed to fulfill the requirements of the act.

restoration. The reestablishment of native plant cover in an area to predisturbance conditions.

retention. A visual quality objective that means human activities are not readily evident to the casual forest visitor.

right-of-way. A right of use across the lands of others. It usually does not apply to absolute purchase of ownership.

RIM. *See* Recreation Information Management.

riparian areas. Areas with distinctive resource values and characteristics that are comprised of aquatic and riparian ecosystems, 100-year floodplains, wetlands, and all upland areas within a horizontal distance of approximately 100 feet from the edge of perennial water bodies.

riparian ecosystems. A transition between the aquatic ecosystem and adjacent terrestrial ecosystems identified by the presence of very poorly drained soils.

RNA. *See* research natural area.

road reconstruction. Road reconstruction falls into three categories: (1) realignment - results in a new location for existing roads or parts of a road; (2) betterment - investment that raises the traffic service level of a road or improves its safety or operating efficiency; (3) restoration - investment required to rebuild a road to its approved traffic service level.

roaded natural. A classification of the Recreation Opportunity Spectrum that characterizes a predominantly natural environment with evidence of some resource utilization.

Roadless Area Review and Evaluation II. *See* RARE II.

ROS. *See* Recreation Opportunity Spectrum.

rotation. The number of years, including the regeneration period, required to establish and grow timber crops to a specified condition of maturity for regeneration harvest. The rotation age is

based on the selected management prescriptions in the Forest Plan.

roundwood. Trees that are used without being milled (fence posts, telephone poles, pulpwood, etc.).

RPA. *See* Resources Planning Act.

rural. A Recreation Opportunity Spectrum classification for areas characterized by a substantially modified natural environment.

RVD. *See* recreation visitor-day.

S

salvage. Removal of trees that are dead, dying, or in imminent danger of being killed by injurious agents.

salvage of dead stands. Removal of all dead trees in a stand. This does not include removal of tree posing a safety hazard or the removal of trees to halt the spread of injurious agents.

savannah. A flat, almost treeless grassland.

sawtimber. Trees suitable in size and quality for producing logs that can be processed into dimension lumber.

scoping. The process by which the Forest Service determines the extent of analysis necessary for an informed decision on a proposed action.

sediment yield. Amount of suspended sediment delivered into a watercourse.

seed orchard. An area containing trees, selected on certain desired heritable characteristics, that are bred to produce seed.

seed tree. A tree selected, and left standing after harvest, to provide seed for stand regeneration.

seed-tree method. The removal in one cut of most of the mature timber from an area except for a small number of desirable trees retained to provide seed for regeneration.

semiprimitive motorized. A classification of the Recreation Opportunity Spectrum characterized by a predominantly unmodified natural environment of a size and location that provides good to moderate opportunity for isolation from sights and sounds of humans; use of motorized transportation is permitted.

semiprimitive nonmotorized. A classification of Recreation Opportunity Spectrum characterized by a predominantly unmodified natural environment of a size and location that provides opportunity for isolation from sights and sounds of humans; motorized transportation is not permitted.

sensitive species. Those species that (1) have appeared in the *Federal Register* as proposals for classification and are under consideration for official listing as endangered or threatened species, (2) are on an official State list, or (3) are recognized by the Regional Forester to need special management to prevent the need for their placement on Federal or State lists.

seral stage. The stage of succession of a plant or animal community that is transitional. If left alone, the seral stage will give way to another community that represents a further stage of succession.

shelterwood method. A method of establishing a new stand by gradually removing the existing trees so new seedlings or sprouts become established under the protection of the remaining trees. Normally, this is done in two separate harvests during a 5-to-10 year period.

shoreline improvements. Facilities—such as fishing piers, boardwalks, steps, etc.—that provide access for scenic viewing, fishing, hiking, or other shoreline recreation.

significance (of heritage resources). A significant heritage resource meets the criteria for inclusion on the National Register of Historic Places.

silviculture. The art and science of controlling the establishment, composition, and growth of forests.

silvicultural system. A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the fellings that remove the mature crop and provide for regeneration and according to the forest thereby produced.

single tree selection. The cutting method that describes the silvicultural system in which trees are removed individually, in a random manner each year over an entire forest or stand. The resultant stand may regenerate naturally and become all-aged.

site index. An index based on growth of dominant trees at a chosen age. On national forests, the chosen age is normally 50 years. Thus, a site index of 70 indicates that the trees at age 50 would be 70 feet tall.

site preparation. Preparation of the ground surface before planting or natural regeneration.

snag. A standing dead tree used by birds for nesting, roosting, perching, courting, and food gathering.

soil fertility. The quality of soil that enables it to provide nutrients in adequate amounts and in proper balance for the growth of specified plants.

soil productivity. The capacity of a soil to produce a specified crop.

spacial analysis. A determination if alternative solutions can be implemented on the ground considering the relationships of adjacent activities.

special interest area. Area established and managed for its unique, special features.

special-use permit. Authorization for use and occupancy of National Forest System land.

stand. A community of trees possessing sufficient uniformity in regard to vegetation type, age class, vigor, size class, and stocking class to be distinguishable from adjacent communities.

standard. Requirement that precludes or imposes limitations on resource management practices and uses, usually for resource protection, public safety, or addressing an issue.

suitable for timber production. Land that is to be managed for timber production on a regulated basis.

summer home site. A site occupied by a private recreational residence under a special-use permit.

sustained yield. The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the National Forest System without impairment of the productivity of the land.

system road. A road that is part of the forest development transportation system and that will be constructed and/or maintained to a specified level.

T

target. Planned result to be achieved within a stated period of time.

temporary road. A road built as a temporary development and not intended to be a part of the transportation systems.

thinning. Cutting made in an immature stand, primarily designed to accelerate the annual growth of the remaining trees, but also by suitable selection to improve the average form of the remaining trees.

threatened species. Any species of plant or animal that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

TIS. *See* Transportation Inventory System.

titi. The common name for several small, evergreen, hardwood species of plants that grow in poorly drained, wet depressions and bayheads. The three species that predominate are black titi, little leaf cyrilla, and swamp cyrilla.

tractor-plow unit. A unit composed of a tracked vehicle pulling a fire plow or a set of disks. This unit is used to construct fire control lines.

traffic service level. Description of the significant traffic characteristics and operating conditions for a road.

trailhead. The point where a trail begins, which often includes parking lot and a bulletin board.

Transportation Inventory System (TIS). A data base that includes bridges, roads, and trails.

TSPIRS (Timber Sale Program Information Reporting System). A system for tracking current year expenses and revenues for the Forest Service timber sale program.

U

understory. Vegetation growing under a more-or-less continuous cover of branches and foliage formed by the upper portion of adjacent trees and other woody growth.

uneven-aged management. The application of a combination of actions needed to simultaneously maintain continuous high forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection (36 CFR 219.3).

unmarked travelway. A travelway that looks like a road or trail but is not on the road or trail system and is not considered a numbered road or designated trail.

unsuitable for timber production. Forest land that is not managed for timber production because (1) the land has been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service; (2) the land is not producing or capable of producing crops of industrial wood; (3) technology is not available to prevent irreversible damage to soils, productivity, or watershed conditions; (4) there is no reasonable assurance that lands can be adequately restocked within 5 years after final harvest, based on existing technology and knowledge; (5) there is, at present, a lack of adequate information on biological responses to timber management activities; or (6) timber management is inconsistent with or not cost efficient in meeting the management requirements and multiple-use objectives specified in the Forest Plan.

V

vegetation management. The management of vegetation by practices such as grazing, prescribed burning, herbicide use, timber harvesting, and tree planting or removal to meet wildlife, visual, timber, special area, water, and other management objectives.

viewshed. A viewshed is a portion of a landscape visible from one or more vantage points.

visual quality objective (VQO). The degrees of acceptable alteration of the characteristic landscape.

visual resource. The composite of basic terrain, geologic features, water features, vegetative patterns, and land-use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

W

water yield. The total net amount of water produced on the forests including streamflow at the point.

watershed. The total area above a given point on a stream that contributes water to the flow at the point.

wetland. Areas that are inundated by surface water or groundwater with a frequency sufficient to support, and under normal circumstances do or could support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include bogs, marshes, swamps, and similar areas—such as natural ponds, mud flats, potholes, river overflows, sloughs, and wet meadows.

wheelchair. A device designed solely for use by a mobility-impaired person for locomotion that is suitable for use in an indoor pedestrian area.

wild and scenic river. A river or section of river designated as such by congressional action under the 1968 Wild and Scenic Rivers Act, as supplemented and amended, or those sections of a river designated as wild, scenic, or recreational by an act of the legislature of the state or states through which it flows.

wilderness. Congressionally designated areas that are essentially unaltered and undisturbed by humans. Management in

these areas preserves and protects their physical and biological characteristics.

Wilderness Act of 1964. PL 88-577. This act gave Congress authority to designate certain areas of public land as wilderness. It established the National Wilderness Preservation System to secure for present and future generations of the American people the benefits of an enduring resource of wilderness.

wilderness study area. Lands possessing the basic characteristics of wilderness and designated by Congress for further wilderness study.

wildland fire. Any fire not ignited as a prescribed fire. If a wildland fire is naturally ignited in wilderness, it may in certain conditions be managed for resource benefit. All other wildland fires must be suppressed, but the full range of other suppression responses is allowable.

wildlife and fish user-day (WFUD). A unit of measure that represents one person hunting or viewing wildlife for a 12-hour period or fishing for a 4-hour period.

windrowing. Piling cut vegetation in a long, low row as if by the wind.

woods road. A travelway not designed as a road, but created through repeated use. It is not on the road system and not considered a numbered road.

Y

yield table. A tabular statement of outputs expected to be produced under a specific set of conditions.

APPENDIX A

SUMMARY OF PUBLIC INVOLVEMENT

Public involvement is a key part of the planning process. Public comment helps identify what people want from the national forests in the form of goods, services, and environmental conditions. Issues submitted by the public, as well as from within the Forest Service, guided the need to change current management strategies.

Preliminary Issues

On March 27, 1990, we sent a scoping letter to interested and affected publics, asking for comments on 10 preliminary issues to be addressed in the significant amendment of the Forest Plan. Those issues are:

1. **Longleaf Pine-Wiregrass Management.** Issues concern the restoration and maintenance of longleaf pine-wiregrass communities, conversion of off-site slash pine to longleaf pine, techniques used to restore and maintain these communities, timber management practices allowed, natural regeneration techniques used, stocking rates to be applied, and frequency of prescribed burning.

2. **Red-cockaded Woodpecker Habitat Management.** Issues concern the level of timber harvested under the *Record of Decision, Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* (RCW EIS) constraints, clearcutting as a regeneration method, old-growth conditions, alternative methods of red-cockaded woodpecker (RCW) management, prescribed burning to improve RCW habitat, protecting cavity trees during prescribed burning, retaining snags, and economic and social impacts due to reduced timber harvest levels.

3. **Hardwood Mast Production.** Issues concern providing for mast production by protecting stands, or by allowing burning that would result in upland oak in areas where they would occur naturally.

4. **Pine Restoration of Titi.** Issues concern using site preparation to reclaim encroached areas, restoring titi, preserving titi communities, using prescribed fire, monitoring, and using heavy equipment in pine restoration work.

5. **Management of Wilderness Study Areas.** Issues concern preserving and maintaining wilderness values for the Clear Lake area on the Wakulla Ranger District and Natural Area on the Osceola National Forest (NF).

6. **Savannah Management.** Issues concern the protection of savannahs, maintenance of their natural state through the use of fire, use of firelines, and protection of rare and endangered species.

7. **Fire Plowing Methods and Procedures.** Issues concern the adverse effects of fireline use,

reduction in the use of firelines or stopping the use of firelines, reducing fireline impacts, alternatives to fireline construction, and rehabilitation of firelines.

8. **Use of Off-Highway Vehicles (OHV).** Issues concern resource damage caused by OHVs and what OHV restrictions should apply.
9. **Management Areas and Desired Future Conditions.** Issues concern how desired future conditions are allocated across the forests.
10. **Potential Wild and Scenic Rivers Management.** Issues concern designating waterways and protecting proposed areas.

Issues Not Related to Preliminary Issues

In addition to the 10 preliminary issues, several other issues surfaced during the initial scoping period. These additional issues are summarized below.

Recreation Management

Heritage Resource. Issues concern emphasizing the historical resource over timber production.

General Recreation. Issues concern increasing demand for recreational opportunities, leaving natural areas for recreation, emphasizing hiking and camping, and discontinuing concessions at Forest Service recreation sites.

Recreation Activities. Issues concern operating Jetskis on forest lakes, using airboats, restricting horsepower on motorboats, discontinuing boating or fishing on some lakes, and limiting some trails to hiking only.

Hunting. Issues concern reducing open gun season, using dogs on the Ocala NF, prohibiting firearms in large areas of the forest, and closing hunting season(s) for black bear and fox squirrel.

Hiking Trails. Issues concern expanding the trail systems in the Ocala NF, providing additional trails exclusively for hikers, disturbing soil on trails, considering aesthetics when planning timber activities adjacent to trails, and using buffers to ensure a quality hiking experience.

Horse Trails. Issues concern adding trails of different lengths and providing wells, rest room facilities, and horse camping areas.

Visual Resource. Issues concern leaving more hardwood trees in regeneration cuts; improving appearances of regeneration cuts on the Ocala NF; and using buffers along road, trails, lakes, and swamps.

Wilderness. Issues concern prescribed burns in wilderness areas, wilderness areas becoming overmature sand pine-scrub oak thickets, and travel and noise restrictions in wilderness areas.

Wildlife

Fish Habitat. Issues concern addressing biodiversity before increasing populations for sportfishing.

Wildlife Habitat. Issues concern wildlife cover, planting wildlife food, night hunting, decreasing populations, clearcutting effects on wildlife habitat, producing wildlife mast, and reintroducing native species.

Scrub Management Areas. Issues concern the establishment of management areas (Ancient Island scrub rare plant management area) to protect the sand pine scrub community, including several threatened and endangered species.

Threatened and Endangered Species

Issues concern the impacts management activities have on all species.

Florida Black Bear. Issues concern identifying areas of importance to the bear, analyzing impacts from all user activities, and prohibiting bear hunting on the Apalachicola, Ocala, and Osceola NFs.

Florida Panther. Issues concern the reintroduction of the panther, adverse impacts of increased forest access, amount of forest users, timber management practices, and roads impacting panther habitat.

Florida Scrub-Jay. Issues concern providing sufficient habitat, using prescribed fire, using clearcuts (size and shape), leaving 1 acre of scrub per 25 acres of harvested sand pine, and developing a scrub-jay management area.

Range

Issues concern the termination of the range program.

Timber

Silviculture. Issues concern changing natural communities by using natural seed, limiting silvicultural practices where threatened and endangered species occur, managing for ecosystems instead of single species, using fire instead of mechanical site preparation, using herbicides, using lower stocking levels, using natural spacing, determining rotation length, and using uneven-aged management methods.

Timber Harvest. Issues concern maintaining timber production, setting low timber harvest levels, clearcutting harvest method, removing shelterwood trees, removing stumpwood, and impacting resources.

Timber Policy. Issues concern growing timber for commercial interests, selling timber, writing prescriptions, harvesting cypress and bottomland hardwood, producing energy wood, and long-term monitoring.

Ecosystem Management

Issues concern protecting ecosystems, restoring ecosystems, changing timber management to preserve ecosystems, managing natural ecological systems, minimizing system fragmentation, using herbicides in native communities, establishing a permanent old-growth overstory in all timber stands, managing scrub ecosystems (Ancient Islands scrub rare plant management areas), using fire for ecological purposes, and monitoring ecosystems.

Soil, Water, and Air

Issues concern developing stricter standards and guidelines, prohibiting timber harvest and road construction in wetlands, establishing no cut zones along streams and other water bodies, managing seepage bogs, protecting karst ponds, restoring the Ocklawaha River system, and monitoring watersheds.

Minerals

Issues concern exploiting and extracting minerals and advertising mineral permits.

Lands

Issues concern land acquisition of inholdings and outholdings, land exchange policies, and incompatible land uses.

Facilities

Road Closure. Issues concern closing roads and accessibility.

Road Construction. Issues concern reducing road densities, minimizing construction of new roads, and using limerock to fill low areas.

Planning

Planning Process. Issues concern the planning process, responding to letters received, addressing the appellants' comments and suggestions, developing standards and guidelines, developing logical ecological units, accelerating the planning process, developing separate plans and planning models, and staggering schedules for plan revisions of each forest.

Multiple Resource Concerns. Issues concern overemphasizing timber management compared to other resources, managing yields other than timber on a sustained-yield basis, and managing forests for all species and resources.

Prescribed Fire

Issues concern managing fire and ecosystems; avoiding wildfires; increasing summer burning; using a mix of winter, spring, and summer burning; and increasing frequency of burning.

Socioeconomic

Issues concern the analysis of social and economic impacts caused by changes in resource outputs.

Ecology

Issues concern restoring and maintaining native flora and fauna ecosystems; impacting native ecosystem from management practices; and monitoring sensitive plants, animals, and natural communities.

Natural Processes

Issues concern managing ecosystems in a manner that mimics natural processes that existed prior to their disturbance by humans.

Biodiversity

Issues concern making biodiversity a major goal, using timber management practices that provide for a high level of biodiversity, and using fire to protect and perpetuate high biodiversity levels.

Preservation

Issues concern emphasizing conservation of all natural resources, protecting wildlife habitat, and preventing loss of land to development.

Final Issues

On January 2, 1991, we sent another letter to the public listing the desired future conditions that were proposed for the significant amendment. When the decision was made to revise the Forest Plan, an additional letter was sent on July 14, 1992,

asking for comments on issues for the revision.

Based on previous public comments, four preliminary alternatives were developed and descriptions mailed to the public in January 1995. Public meetings were held throughout the state, and comments were solicited on the preliminary alternatives. Written comments were entered into a data base and reviewed for additional issues to address in the Forest Plan.
The preliminary issues and additional issues identified through public involvement were stated in the form of planning questions to be addressed in the planning process. These planning questions are:

1. **Longleaf Pine-Wiregrass Management.** What types of management should be applied to longleaf pine-wiregrass lands to provide for the restoration and maintenance of this community, and to what extent and which lands should be restored?

2. **RCW Habitat Management.** What types of management methods should be used to provide for the restoration and protection of RCW habitat?

3. **Hardwood Mast Production.** What provisions need to be made to ensure the production of hardwood mast for wildlife species?

4. **Pine Restoration of Titi.** Should titi-encroached lands be restored to pine vegetation, and, if so, what management techniques should be used?

5. **Management of Wilderness Study Areas.** How should wilderness study areas identified be managed in the future?

6. **Savannah Management.** To what extent and by what methods should savannah areas on the Apalachicola NF be managed in the future?

7. **Fire Plowing Methods and Procedures.** What procedures will be used to reduce the impacts of fireline construction, and to what extent should efforts be made to restore existing firelines?

8. **Use of Off-Highway Vehicles.** Should off-highway vehicles be allowed, if allowed what type of measures need to be taken to restrict their use; and what restrictions are needed to avoid impacts on other resources and forest users?

9. **Management Areas and Desired Future Conditions.** What management areas should be used to respond to current management needs and the issues, concerns, and opportunities identified in this process?

10. **Potential Wild and Scenic Rivers Management.** What lands should be identified as potential wild and scenic rivers; and how should these lands be managed to protect wild and scenic river values?

11. **Recreation Use.** What types, amounts, and mix of recreational opportunities should be provided; and what provisions need to be made to allow for increased recreational use?

12. **Hunting.** What provisions should be established to allow hiking and other nonhunting use during open hunting season(s)?

13. **Threatened and Endangered Species.** What management practices

are needed to enhance the habitat management for the Florida black bear, Florida panther, fox squirrel, gopher tortoise, scrub-jay, and other threatened and endangered plant and animal species?

14. **Scrub Management Areas.** What lands and kinds of management practices are needed to protect rare scrub plants and animals?

15. **Range.** Should the range program be terminated?

16. **Silviculture.** What silviculture methods should be used to reforest lands after regeneration harvests to meet ecosystem management goals?

17. **Stumpwood.** Should stumpwood extraction be permitted on the national forests in Florida?

18. **Timber Harvest.** To what extent and under what constraints will timber harvesting be allowed, considering the RCW EIS as well as other resource considerations and economic impacts on local communities?

19. **Ecosystem Management.** What type of changes in current management practices are necessary to meet ecosystem management goals related to restoring and maintaining natural ecological systems?

20. **Water.** What measures need to be taken to protect wetland areas from damage caused by other resource activities?

21. **Minerals.** What actions need to be taken to protect other resources from damage caused by mineral exploration and extraction?

22. **Roads.** What is the proper combination of open and closed roads to meet public needs?

23. **Prescribed Fire.** How often should various lands be burned; and how much burning should be done in the winter, spring, and summer to meet ecosystem management objectives?

24. **Socioeconomic Impacts.** How can the social and economic impacts on local communities, from decreasing resource outputs, be minimized?

25. **Natural Processes.** What efforts need to be made to ensure the forest is managed in a way that mimics the natural processes that occurred before being disturbed by humans?

26. **Biodiversity.** What management techniques are needed to achieve and maintain a high level of biodiversity?

27. **Special Uses.** What are appropriate uses of land to be consistent with the purpose of the national forests, considering the need that multiple uses be compatible with each other?

Public Involvement in the DEIS

The *Draft Environmental Impact Statement* (DEIS) and *Proposed Revised Land and Resource Management Plan for National Forests in Florida* were published in January 1997 with a 120-day public comment period. More than 800 copies of these documents were distributed to the public via mail and during public meetings. From February through April 1997, a series of 17 public workshops

were held in Crawfordville, Bristol, Eustis, Gainesville, Olustee, Orange Park, Orlando, Panama City, Silver Springs, Tallahassee, and Umatilla.

By the end of the comment period, more than 400 letters had been received. These letters contained more than 4,000 individual comments. The comments were coded and entered into a data base where the comments could be sorted by subject and similar comments combined. The comments were reviewed by the Interdisciplinary Team and the forest Leadership Team and changes were agreed on in the Final EIS and Forest Plan based on these comments. Responses were made for each comment. The comments and responses are found in Appendix G.

Coordination with Other Public Planning

Coordination with Federal, State, and local governments and Native American tribes occurred throughout the planning process. Affected governments were contacted during the scoping period and the Florida State Clearinghouse was notified of activities for circulation among State agencies. A special agency coordination meeting was held in Tallahassee in November 1995 to provide for further agency coordination and to answer questions. An additional meeting was held at Wakulla Springs State Park in 1996. Planning is also coordinated through membership in the Florida State Rural Development Council and as the Federal agency representative for the Florida Greenways Commission. Federal, State, and local governments and Native American tribes were invited to, and participated in, the series of public meetings held throughout the State of Florida during the draft review period. These organizations also provided comments on the DEIS and Proposed Revised Plan.

APPENDIX B

ANALYSIS PROCESS

This appendix presents a technical discussion of the analysis process and computer models used in the Revised Forest Plan. Information presented supplements the broader and less technical descriptions of the Final Environmental Impact Statement (FEIS). Additional information and documents used in the analysis process are contained in the planning record. The planning record in its entirety is incorporated by reference.

A major goal in forest planning is to provide enough information to help decision makers and the public determine which combinations of goods, services, and land allocations will maximize net public benefits. Regulations developed under the National Forest Management Act (NFMA) provide the analytical framework within which these decisions are made.

Planning Process

A 10-step process defined in NFMA regulations was followed. Steps 2, 3, 4, 5, and 6 are described in this appendix. Steps 1, 7, and 8 are described in Chapters 1 and 2 and Appendix A. Steps 9 and 10 are discussed in the Revised Forest Plan. A brief discussion of the process follows.

1. **Identification of Purpose and Need, Issues, Concerns, and Opportunities.** An assessment of changes in public issues, management concerns, and resource use opportunities since the Forest Plan was initially developed and amended.

2. **Planning Criteria.** Criteria are designed to guide the collection and use of inventory data and information Analysis of the Management Situation (AMS), and formulation and evaluation of alternatives.

3. **Inventory Data and Information Collection.** The kind of data and information needed is determined based on issues, concerns, opportunities, and the determination of the need for change.

4. **Analysis of the Management Situation.** This analysis determines the need to change management direction and provides a basis for formulation of reasonable alternatives.

5. **Formulation of Alternatives.** Alternatives are formulated to provide a range of management scenarios that address the issues and the need for change.

6. **Estimate Effects of Alternatives.** Physical, biological, economical, and social effects of implementing alternatives are considered in detail as they respond to the issues and the need for change.

7. **Evaluation of Alternatives.** Significant effects of the alternatives are evaluated and compared to assist in identifying the one that comes nearest to maximizing net public benefits.

8. **Selection of the Preferred Alternative.** A preferred alternative is selected and is displayed as the proposed revised Forest Plan for public comment.

9. **Plan Approval and Implementation.** After public comment and review, the Regional Forester makes the decision on the Revised Forest Plan. A Record of Decision documents this step.

10. **Monitoring and Evaluation.** The final Revised Forest Plan establishes a monitoring and evaluation strategy as a feedback mechanism to ensure the Forest Plan is being implemented and is effective and valid.

Planning Criteria (Step 2)

The Forest Service uses many sources for laying the groundwork on how it will accomplish the Forest Plan revision. Criteria for direction and guidance for each step of the 10-step planning process are based on the following:

1. State and Federal laws, Executive Orders, regulations, agency policy, and direction found in Forest Service manuals and handbooks.
2. Goals and objectives of the Resources Planning Act (RPA) program and Regional guides.
3. Recommendations and assumptions developed from public issues, management concerns, and resource use and development opportunities.
4. Plans and programs of other Federal agencies, State and local governments, and Native Americans.
5. Ecological, technological, and economical factors.
6. Alternatives that are possible to implement.
7. Alternatives that meet management and resource integration requirements.
8. Achievement of various levels of multiple-use objectives.

Inventory Data and Information Collection (Step 3)

Inventory data and information were collected to the detail necessary to support the decisions to be made. The following criteria apply to all elements of information collection.

1. Existing data will be used unless it is inadequate.
2. New data and information will be collected on an as-needed basis.
3. Sources of information and data will be documented in the planning record.
4. The geographic information system (GIS) will be used for map storage and manipulation, for spacial analysis, and to generate maps for the Forest Plan.
5. Management areas for use in FORPLAN will be developed from GIS data.
6. Where assumptions are used instead of specific data or information, the following shall be done and documented in the process records.
   a. Identify analytical techniques and associated assumptions.
   b. Document why each assumption was used.

c. Identify advantages and disadvantages of the analytical techniques and assumptions.

The issues in Chapter 1 and Appendix A were an important basis for determining what data should be updated or collected and what effects needed to be evaluated. Existing data and new information were both used in the revision.

One of the new sources of information used was the classification of land units into a hierarchical system called *ecological classification system*. The purpose of this is to delineate, name, and describe units of land that have management significance and ecological integrity. From largest to smallest, units of the hierarchy are domain, division, province, section, subsection, landtype association (LTA), landtype, phase, and site. The national forests (NFs) are within the humid temperate domain, subtropical division, and outer coastal plain mixed forest province.

At the next lower levels, the Apalachicola NF lies within the Florida Coastal Lowlands, western section and the Coastal Plains and Flatwoods, lower section. Subsections include Gulf Coastal Flatwoods, South Coastal Plains, and Gulf Southern Loam Hills. The Osceola NF lies within the Atlantic Coastal Flatwoods section. Subsections include the Upper Terraces, Okefenokee Uplands, and Okefenokee Swamp. The Ocala NF lies within the Coastal Plains and Flatwoods lower section and the Florida Central Highlands subsection.

The level of most concern to forestland management planning is the level below subsection, the landtype association. This level occurs at a scale from 10 to 250 square miles. The following is a brief description of landtype associations found on the Apalachicola, Ocala, and Osceola NFs. Due to the small amount of acreage on the Choctawhatchee NF, LTAs were not delineated.

LTAs that were delineated by an interdisciplinary team are in draft form. Additional refinement and ground-truthing is necessary and will occur through the planning period. These LTAs were used to define areas on the forests capable of attaining certain desired future conditions (DFCs).

Different DFCs were applied to areas corresponding to a single LTA or a combination of LTAs to develop plan alternatives.

Apalachicola National Forest

Landtype Association of Apalachicola National Forest

Apalachicola Depressions and Uplands

Apalachicola Depressions and Uplands LTA is a Pliocene-Pleistocene area with gently-sloping topography. It is poorly drained with the water table near the surface. Soils have organic layers over yellowish, loamy subsoils. Longleaf pine is the dominant upland tree, with bays common in swamps and stringers.

Apalachicola Savannahs

Apalachicola Savannahs LTA is a Pleistocene feature. Its topography is gently sloping with concave areas that pond during the rainy seasons, forming savannahs. Ridge soils are sandy, while soils in concave areas are loamy with clay subsoils. Longleaf pine is the dominant tree species. Savannahs are treeless and have a highly diverse wetland herbaceous community.

Big Bend River Floodplains

Big Bend River Floodplains LTA has a smooth to concave topography with a well-defined drainage pattern. The geology dates from the Pleistocene. The somewhat poorly to well-drained soils have a loamy surface layer over clay subsoil. The dominant forest type is hardwood with scattered longleaf and loblolly pine.

Munson Sandhills

Munson Sandhills LTA is a Pliocene-Pleistocene area of gently-rolling hills with sinks. Soil is sand with clay lenses underlaying erosional limestone that is moderately to excessively drained. Dominant trees are longleaf pine, turkey oak, and bluejack oak.

Apalachicola Bays and Flatwoods

Apalachicola Bays and Flatwoods LTA dates from the Pliocene-Pleistocene. It is nearly level, with poorly defined stream channels and broad sheet flow. Ponding is common. Soils are organic layers over gray-to-brown sands. Common vegetative communities are longleaf pine-wiregrass, with scattered slash pine and bay and titi swamps.

Ocala NF

Landtype Associations of Ocala National Forest

Eureka Flats

Eureka Flats LTA lies in an area of Pleistocene sand shallowly deposited over remnants of an old alluvium deposit associated with the Ocklawaha River. Topography is flat. Soils are very poorly drained due to the ability of the alluvium silty clay to perch water temporarily. Soil fertility is moderate. Slash and loblolly pine and water and live oaks dominate.

Lake Eaton Lowlands

Lake Eaton Lowlands LTA is an area of late-Pliocene lowlands with uplifted sandy ridges. It is characterized by a series of blackwater or tea-colored lakes connected by streams or broad drainages which eventually drain into the Ocklawaha River. Soils are very poorly drained sands and mucks and have some clay. Dominant forest type is mixed pine and hardwood.

Ocala Eolian Sandy Hills

Ocala Eolian Sandy Hills LTA is Pleistocene wind-deposited sand laid over the Cypresshead Formation, which had been deposited and eroded earlier (Pliocene). The topography was modified by karst. Undulating sandhills occasionally are interrupted by lakes, sinks, or prairies. The excessively well-drained sand has low fertility and is low in organics. Sand pine scrub dominates, but several islands of longleaf pine-wiregrass also occur.

Ocala Wet Prairies

Ocala Wet Prairies LTA consists of oligotrophic lakes and ponds in karst drainage basins within eolian sandy hills. The geology of the LTA dates from the Miocene, as observed by the Hawthorne formation. Topography is flat on prairies, then rises in gentle hills around and between prairies. Prairies range in size from a few acres to hundreds of acres. Soils are sand, silt, and clay. Wet prairie vegetation is rimmed by slash pine and saw palmetto embedded in sand pine scrub.

Ponded Scrub

Ponded Scrub LTA consists of Pleistocene uplifted sandhills with numerous karst lakes and small prairies. Soils are eolian sands with a spodic horizon present, though the spodic horizon may be as deep as 3-4 meters. Soils vary from excessively drained on ridges to poorly drained at lower elevations. Vegetation is a mosaic of plant communities, including sand pine, longleaf pine, bay, and maple.

St. Johns Riverine Lowlands

St. Johns Riverine Lowlands LTA is comprised of Holocene river floodplains and adjacent flats. It has many springs, drowned dunes, and estuarine deposits. Soils are sand, shell, clay, marl, peat, and silt. Soils are poorly to very poorly drained with seasonal flooding. Wetland hardwood, cypress, black gum, maple, bay, and ash are the dominant trees.

Osceola NF

Landtype Associations of Osceola National Forest

Big Gum Cypress Swamp

Big Gum Cypress Swamp LTA is a Pliocene basin with muck or peat overlying sand or fine sandy loam. It is characteristically waterlogged much of the year, but permanent watercourses are difficult to discern. Cypress, black gum, and slash pine are the dominant trees.

Headwaters Floodplains

Headwaters Floodplains LTA consists of Miocene stream courses with distinct concave bottoms and evidence of natural levees. Slopes adjacent to streambeds may reach 5 percent. Soils are poorly drained fine sands. Mixed bay swamps dominate the stream drainages.

Lake City Ridge Flatwoods

Lake City Ridge Flatwoods LTA occurs on moist, sandy, flat ridges of a Miocene marine terrace. The water table is within 1 foot of the surface for 6 months of the year. Predominant trees are longleaf pine with scattered slash pine and bay and cypress in small wetland depressions.

Osceola Terraces Wet Flatwoods

Osceola Terraces Wet Flatwoods LTA is a wet upland sandy flat interspersed with moist sandy ridges dating from the Miocene and Pliocene. It has a poorly defined drainage system and is subject to rainy-season ponding. Predominant trees are slash pine with scattered longleaf pine. Many small depressions and strands contain cypress, slash pine, black gum, and bay.

Pinhook Basin Shrub Swamp

Pinhook Basin Shrub Swamp LTA is a Pliocene waterlogged floodplain with natural levees along streams. The area has large depression with islands of higher ground. Soil is peaty layer over sand, with a subsoil containing clay. Vegetation is dominated by shrubs such as fetterbush, gallberry, wax myrtle, and titi, with scattered cypress, black gum, and pond pine.

Analysis of the Management Situation (Step 4)

In addition to the emerging issues, the need for change was identified through an AMS. This analysis considers results of monitoring, other policy and direction since 1986, the 5-year review, the current condition of the resources, and supply and demand factors to determine the need for change in management direction, and the ability of the planning area covered by the Forest Plan to supply goods and services. It provides a basis for formulating a broad range of reasonable alternatives. A summary of the major findings of this analysis follows.

Resource Demands

Resource supply and demand analyses were conducted for recreation, timber, and range. The recreation analysis included 14 recreational activities and considered the changes that have occurred since the 1985 AMS. Demand was determined using the Florida's Statewide Comprehensive Outdoor Recreation Plan (SCORP) data on

outdoor recreation demand and needs for resources and facilities by activity. The percent change for use in each activity was reported for the period 1992-95 and projected changes reported for 1995-2000. The increase in demand by activity ranged from 8.5 percent to 16 percent. The lowest increase was in hunting, and the highest increase was in recreational vehicle camping. The supply of recreation sites was determined using SCORP data. The supply of recreation resources on *National Forests in Florida* was compared to the supply statewide for each of the 14 recreation activities analyzed.

Timber resource supply and demand was analyzed through an agreement with North Carolina State University. This analysis used historical national forest timber sale data to examine the statistical relationship between price trends in public and private timber markets. These trends were compared to regional trends used in the RPA planning process. It was determined that regional price trends are appropriate for use in Florida. The previously developed Sub-regional Timber Supply Model was used to examine the aggregate impact of changes in national forest timber harvest on supply within the market area and stumpage prices. Results of this analysis are found in the ``Timber'' section of Chapter 3.

A grazing demand analysis was conducted for *National Forests in Florida* that described past grazing trends on national forest lands and private lands, government policies affecting the level of grazing on national forests, socioeconomic factors that influence the use of private and public rangelands, and the cattle industry in Florida. Several future economic scenarios and the implications that each would have on the use of the forests were analyzed. Demand for grazing is not expected to change significantly during the next decade.

Since 1986, several changes in policy and social trends affected management of the forests. Increasing interest in environmental issues and public land management led to greater public involvement in decision making.

In June 1992, the Chief issued a policy of ecosystem management on national forests with direction for reduction in clearcutting on the national forests. The Forest Plan needed to be revised to incorporate fully these decisions and policies.

Forest Plan needed to incorporate the recommended 1990 RPA program.

Forest Plan needed to provide goals and objectives for ecological restoration and maintenance.

A broader range of silvicultural systems and harvest methods needed to be evaluated and guidelines incorporated into the Forest Plan.

Many of the management area allocations were too broad to provide meaningful direction using an ecological approach to management. Management areas needed to be redefined.

Forest Plan needed to include the ecological classification system being developed by the Forest Service.

Monitoring and evaluation strategy of the Forest Plan needed to be revised to answer whether we are achieving goals, objectives, and desired future conditions of the Forest Plan rather than emphasizing outputs and activities.

More direction for the mix and types of developed recreation facilities was needed. More specific direction was needed on the proper mix, amount, and compatibility of uses of the trail system on the national forests and more specifics on off-highway vehicle policy.
A recommendation was needed for the wilderness study areas, for candidate research natural areas (RNAs), and for rivers to include in the National Wild and Scenic Rivers System.

Forest Plan needed to be revised to include the new Scenery Management System.

Forest Plan needed to be revised to give better direction on the goals and objectives of the fisheries program and standards and guidelines for fisheries management.

The determination of habitat management areas and population objectives for red-cockaded woodpeckers (RCWs) was needed to conform to Regional direction.

The management indicator species selected needed to be reviewed considering new information, the emphasis on an ecological approach to ecosystem management, and the concern for Neotropical migratory birds.
Objectives for range use and forage improvement needed to be revised.

The allowable sale quantity (ASQ) needed to be recalculated to account for the effects of ecosystem management and RCW guidelines.

More direction was needed for prioritizing land exchanges and acquisitions.

Forest Plan needed to be revised to include new levels of road construction, reconstruction, maintenance, and closure.

Prescribed burning goals and levels needed to be revised and air quality information needed to be augmented.

Forest Plan needed to include guidance on the appropriate uses of national forests for permitting special uses on the forests.

Formulation of Alternatives (Step 5)

All alternatives must meet the management requirements found in 36 CFR 219.27. These management requirements are directed toward producing a viable level of resources for both the short and long term. Most of the management requirements are met using standards and guidelines incorporated into applicable management area prescriptions. Management requirements also can be met by analyzing and constraining the FORPLAN model, such as dictating specific allocations or timing. Spacial arrangement of FORPLAN solutions can be analyzed through GIS to determine if management requirements are met. The ultimate determination of whether management requirements are met will depend on systematic and frequent monitoring.

Desired Future Conditions Comprising the Alternatives

In the planning process, several desired future conditions were developed to provide alternative ways of resolving issues and management concerns. The desired future conditions were applied in various combinations based on the

ecological classifications of the forests. Different allocations of DFCs result in different alternatives. The following are descriptions of each desired future condition considered in developing Forest Plan alternatives.

0.0 Congressionally Designated Lands

These lands include wilderness, wild and scenic river corridors, and wilderness study areas.

Desired Future Condition

Ecosystems are river corridors, river and bay swamps with pine flatwoods around the edges, upland pine forests, sand pine scrub, and marshes (prairies). These areas show little evidence of human disturbance. Vegetation is shaped by natural processes such as floods, fires, storms, insects, and diseases. Prescribed fire helps replace the natural fires interrupted by human activity outside the area's boundaries. Since fire frequency is low in swamps, these areas show little fire evidence, other than an occasional lightning-struck tree. Barring natural catastrophe, these forests are old. Blackened tree trunks are common in the pine flatwoods and upland pine forests, where low-intensity fires are frequent. Here, too, trees are old.

In the sand pine scrub, large areas might exist where all above-ground vegetation has been killed by intense fire, while other areas are in various stages of recovery from such events. Plowed firelines to stop wildfires will be used only under the most extreme conditions, and they will be rehabilitated. Snags and downed wood are present throughout the area.

In swamps, one commonly finds large cypress and tupelo. Other canopy trees include sweet bay, red maple, slash pine, and several species of flood-tolerant oak; the acorns provide food for wildlife. Some river segments may run through open marsh, where emergent grasses and herbs dominate. In river swamps, *flowing water* keeps the understory sparse, yet it is diverse—including dahoon holly, greenbriers, titi, and wax myrtle. In still-water swamps, *standing water* keeps the understory dense but less diverse. Fewer species can tolerate the lack of air in standing water. Titi are here, as are fetterbush, sphagnum moss, Virginia willow, and wax myrtle. As these grade into bordering flatwoods, the canopy turns to scattered pines (pond and slash pine). Shrubs, especially titi, may become the dominant feature in places. Titi-dominated swamps burn infrequently and stay dense and tall, but fire burns the pine flatwoods more effectively. Here the understory may be lower and consist of shrubs such as palmetto and gallberry, or it may be dominated by a diverse set of herbs, grasses, and sedges.

At the slightly higher elevation of upland pines, fire-tolerant longleaf pine is the dominant species. Its understory is parklike, dominated by wiregrass and a diverse set of very low shrubs and herbs. Sand pine scrub habitat is also very dry. Except where it is in the early stages of recovery from a devastating fire, it consists of a picturesque crooked canopy of sand pine with a fairly dense layer of 10-foot shrubs beneath. The latter includes several species of oak. Finally, marshes may be perched in this dry habitat. These

are open, herbaceous areas that may burn during low-water periods.

Wildlife species enjoy little human disturbance with large areas of uninterrupted habitat, including mature forest environments. Species differ from habitat to habitat. Rivers support a variety of crustaceans, fish, and mollusks. Salamanders and frogs are common. Common reptiles are alligators, river cooters, and several kinds of water snakes, including cottonmouths. Water birds (including limpkins, wood ducks, and a variety of herons and egrets) are conspicuous in forested areas and marshes. Barred owls, kites, and pileated woodpeckers can be seen or heard, as well as canopy dwellers such as vireos and warblers. Several kinds of mice, rats, shrews, and squirrels live here, plus black bears, bobcats, otters, and raccoons.

River swamps are home to crayfish, fish, river otters, and snails. Still-water swamps have more amphibians and reptiles. Birds in both these swamps include canopy species (such as warblers), raptors (such as barred owls, hawks, and kites), and water birds (such as limpkins and wood ducks). Rodents include beavers, cotton mice, and southeastern shrews. Large mammals include black bears and possibly Florida panthers. The somewhat drier habitat of the flatwoods is home to bobcats, bobwhite quail, cottontail rabbits, rat snakes, and white-tailed deer. These also move into upland pines, where drier soil supports the deep burrows of gopher tortoises. The very dry sand pine scrub supports several lizard species, while prairies attract wading birds.

Desired Future Condition 0.1
Trailless Wilderness

Goal

To provide an essentially unmodified environment where native species respond to natural forces to which they are adapted and where human influences have minimal impact. To provide the opportunity for humans to experience solitude, closeness with nature, and self-reliance on wildland skills.

Desired Future Condition

Water, soil, and air are in near pristine condition. Rivers, streams, and cross-country travel provide the only access into these areas. There are no roads or trails. Visitors may be nature enthusiasts, canoeists, or hunters. Visitors are usually isolated from the sights and sounds of human activity, and few, if any, other people are encountered. Facilities are not present. Motorized equipment and motorized or mechanical vehicles are never encountered. At off-site locations, displays, presentations, and publications about the area may be found. The area provides large-size (greater than 2,500 acres) and midsize (100-2,499 acres) patches of old growth.

Desired Future Condition 0.2
Wilderness with Trails

Goal

To provide an essentially unmodified natural environment where native species respond to natural forces to which they are adapted and where human influences have minimal impact. To provide the opportunity for humans to experience solitude, closeness to nature, and primitive, but somewhat guided, recreational activity.

Desired Future Condition

Soil, water, and air are in near pristine condition. Areas are at least 5,000 acres. Rivers, streams, and foot or horse trails provide access. Visitors may be nature enthusiasts, hunters, canoeists, hikers, or horseback riders. They are isolated from the sights and sounds of human activity, and only occasionally are other people encountered while passing through the area. Facilities encountered are marked trails, primitive boat access sites, and fire-ring camping areas. Motorized equipment and motorized or mechanical vehicles are never encountered. Displays, presentations, and publications about the area may be found at off-site locations. The area provides large-size (greater than 2,500 acres) and midsize (100-2,499 acres) patches of old growth.

Desired Future Condition 0.3
Wild and Scenic River

Goal

To provide an essentially unmodified natural environment along *wild* segments of wild and scenic rivers and a predominantly natural environment along *scenic* segments.

Desired Future Condition

This area consists of river corridors, so the predominant ecosystem is floodplain wetlands. Higher ridges with drier ecosystems—such as pine flatwoods, upland pine, and sand pine scrub—may be occasionally included in the half-mile-wide corridors. Adjacent to the river, the area rarely burns, though snags killed by lightning may occur. Evidence of wildfires and prescribed fires on higher ridges in the corridor may be seen. Along wild segments, essentially no evidence of recent human activity is present. Along scenic segments, the shoreline is mostly undeveloped, but it is accessible in places by roads or trails. The area provides midsize patches of old growth (100-2,499 acres).

Water and air meet State and Federal quality standards. Soil erosion occurs naturally along river banks. Visitors use the river primarily for recreation activities, such as boating and fishing. In wild segments, they are often isolated from the sights and sound of other human activity and encounter few other users. In scenic segments, they are more likely to encounter other users, including those walking or motoring to the shoreline. Boat access sites of all different levels of development may be encountered.

In wild segments, roads are not encountered. In scenic segments, roads occasionally are encountered. Most have native surfacing and conform in height to the surrounding ground. They are of a low standard and may be difficult to travel with a low-clearance vehicle. A few roads, however, may have sand-clay, limerock, or paved surfacing. They provide access to the river by low-clearance vehicles during most of the year.

Desired Future Condition 0.4
Wilderness Study Area

Goal

These lands are wilderness study areas (Clear Lake on the Apalachicola NF and Natural Area on the Osceola NF), managed to protect their wilderness character until a final determination of use is made by Congress.

Desired Future Condition

Water, soil, and air are in near pristine condition. Areas are at least 5,000 acres. Old roads, hiking trails, and horse trails provide access into the area. Visitors may be nature enthusiasts, hikers, horseback riders, or hunters. They are isolated from the sights and sounds of human activity, and only occasionally are other people encountered while passing through the area. The only facilities might be marked trails, old logging roads, primitive boat access sites, and fire-ring camping areas. Motorized vehicles may be encountered. At off-site locations, displays, presentations, and publications about the area may be found. The area provides large-size (greater than 2,500 acres) and midsize (100-2,499 acres) patches of old growth.

1.0 Remote Areas

These areas are predominantly remote wetlands.

Desired Future Condition 1.1
Remote Wetland

Goal

To provide conditions suitable for the recovery of proposed, endangered, threatened, and sensitive species that require remote undisturbed habitat within large, predominantly wetland areas.

Desired Future Condition

Ecosystems are found in their natural condition with little evidence of human disturbance. The area provides large-size (greater than 2,500 acres) and midsize (100- 2,499 acres) patches of old growth. The local degree of inundation and occasional natural disturbances—including storms, insects, diseases, and fires that sweep across the area during prolonged droughts—shape vegetation patterns. The usually wet conditions make fires rare, but snags and lightning-struck trees are visible. Infrequently the landscape may be interrupted by narrow road corridors.

The area is a still-water swamp dominated by fetterbush and greenbriers. Scattered bay and pond pine trees can be seen. Small areas of open-water glades are scattered throughout. In these areas, such plants as maidencane and bloodroot are found. Glades can be formed by the action of fire

during droughts. The fire burns into the peat, leaving an empty depression. When water returns, it becomes a site of shallow, open water and emergent herbs invade it. Over many years the organic layer builds up again and the site becomes dry enough for shrubs, vines, and occasionally a tree. The density of shrubs compared to glades depends, then, on the length of time since the last fire.

Islands, representing slight changes in elevation, are scattered throughout. They support sparse pond and slash pine overstories. Understory is closed and dense, with mixtures of small trees and shrubs— including bay species, blueberry, gallberry, and palmetto.

Wildlife characteristics of the area are those that thrive in large remote wetlands. Water, soil, and air are in near pristine condition. Areas are at least 10,000 acres. There are very few roads and trails, and they are maintained only at a low level. Since the understory can be hard to penetrate, travel can be difficult. Visitors are isolated from the sights and sounds of human activity, and they encounter few, if any, other people. Facilities are not present. At off-site locations, interpretive material (displays and publications) about the area may be found.

Roads are seldom seen. They may have water-filled ditches and lie above the surrounding ground. Low-water drainage points (bay crossing, streams, etc.) do not have any improvements. These roads are of very low standard and are very rough and irregular. Travel with low-clearance vehicles is difficult.

2.0 Research Areas

These areas include research natural areas, experimental forests, and genetic resource management areas.

Desired Future Condition 2.1
Research Natural Area

Goal

To preserve pristine areas that typify important aquatic, botanic, geologic, or similar natural situations that have special or unique characteristics of scientific interest. To help form a national network of ecological areas for research, education, and maintenance of biological diversity.

Desired Future Condition

Ecosystems are shaped by natural forces and, in some cases, by human management intended to mimic natural forces altered by human activity outside the area's boundary. The area provides large-size (greater than 2,500 acres) and midsize (100-2,499 acres) patches of old growth. Species vary by the type of ecosystem that is present. Water, soil, and air are in near pristine condition. The areas may range from a few acres to 2,500 acres. At one extreme, access may require cross-country travel; at the other, a well-developed interpretive trail may provide access. Visitors may be nature enthusiasts, researchers, or hunters. The

likelihood of encountering other people varies with the site. Interpretive displays may be present.

Nearby roads may range from very rough to paved and are placed so they do not degrade the unique features of the area. They are maintained at a level that does not lead to overuse.

Unique areas where this designation may be appropriate include:

1. **Natural Area** (Osceola NF). This area of about 400 acres is a stand of cypress mixed with black gum, red maple, and slash pine. Cypress are unusually old and from 3 to 4 feet in diameter. This area is designated a research natural area. An option would be to expand it to 1,000 acres to encompass the original natural area established in 1935. It would include good samples of *pond* forest of slash pine and *ridge* forest of longleaf pine. These latter were removed in 1955, because of the difficulty in suppressing fire in them. Given current expertise with prescribed fire management, these areas could now be maintained in a natural state, and the old records concerning them make them valuable for study.

2. **Fanny Bay** (Osceola NF). Fanny Bay is a 350-acre cypress and black gum swamp that has been largely untouched.

3. **Savannahs** (Apalachicola NF). These are wet prairies with a dense ground cover of grasses and herbs. They range in size from about 10 to 500 acres. They are typically wet for 2 to 3 months of the year and naturally burn every 2 to 4 years. The species diversity of wetland herbs and grasses is very high. One large savannah is already designated a research natural area. Others are candidates. An option would be to designate not only a set of savannahs but also the pine flatwoods that surround them as one very large research natural area, in recognition that the savannahs are not ecologically isolated from their surroundings.

4. **Mormon Branch** (Ocala NF). Mormon Branch is unusual for its impressive population of Atlantic white cedar. Here trees are tall and straight. This population of Atlantic white cedar is geographically isolated from the rest of the species and may be a remnant of what once was an extensive white cedar wetland. This area is currently designated a special interest area, but its uniqueness qualifies it as a candidate research natural area.

5. **Mud Lake** (Ocala NF). Mud Lake is a subtropical, 500-acre lake occupying an ancient sinkhole. The lake is less than a meter deep. An unusual combination of factors creates conditions such that an ooze made of tiny fecal pellets full of blue-green algae collects on the lake bottom. Such ooze is the forerunner of oil-rich shales. This lake provides one of the few cases in which the process of oil-shale formation can be studied in action. This lake is currently designated a special interest area, but its uniqueness qualifies it as a candidate research natural area.

6. **Ancient Island** (Ocala NF). This area is approximately 12,000 acres in the center of the sand pine scrub. The sand pine scrub is itself a rare ecosystem. This area has the highest incidence of rare species to be found on the Ocala

NF. Species here include the scrub mint Calamintha, the beautiful and threatened vine Florida bonamia, and the threatened scrub buckwheat. The Florida scrub-jay also lives in this area.

Desired Future Condition 2.2
Experimental Forest

Goal

To provide lands for conducting research to achieve the goals and objectives of the Southern Forest Experiment Station.

Desired Future Condition

In this area, alteration of the landscape is readily apparent and occurs primarily through human intervention. Vegetation patterns are the result of timber harvests that create numerous openings (varying from small to large) in the forest canopy. Once in a while the visitor sees the effects of natural disturbances (fires, storms, insects, and diseases). Snags and lightning- struck trees are seen occasionally. Most of the tree trunks are blackened to various degrees. Evidence of firelines around previous fires is encountered at a moderate rate. In addition, the landscape may be interrupted by narrow road corridors. Remnants of roads leading from permanent roads to openings can be seen. Evidence of research activities—in the form of signs, stakes, tree tags, and paint on trees—is often seen.

The ecosystem is primarily mesic flatwoods, with strand swamp inclusions. In flatwoods, dominant trees are a mix of longleaf and slash pine, and saw palmetto dominates the understory. The appearance of the pine forest may vary from somewhat open and parklike in the oldest stands to closed and dense in the younger stands. From one location to the next, trees may vary in size. In some stands, trees are uniformly spaced in rows, but other stands may show random distribution of the trees. Green stumps may be found throughout the forest.

Wildlife species are those that tolerate a certain amount of human disturbance and live in predominantly longleaf pine forests.

The quality of water, soil, and air is high. The area is about 2,000 acres. Visitors are not isolated from the sights and sounds of human activity. They are likely to encounter other people, including Forest Service personnel. There are few trails and no recreational facilities, though interpretive displays may be present.

Roads may range from very rough to paved. The low standard roads have native surfacing and conform in height to the surrounding ground. Some low drainage points along these roads (bay crossing, streams, etc.) have low-water rock crossings. Travel with low-clearance vehicles is difficult. Some higher-standard roads have sand-clay surfacing, are higher than the surrounding ground, and have ditches. Drainage structures consist of culverts. These roads may not be stable during bad weather conditions. A few roads have a paved surface and are stable and smooth.

Desired Future Condition 2.3
Genetic Resource Management Area

Goal

To provide lands for conducting research that serves as a basis for genetic conservation and propagation of sand pine and as a basis for genetic conservation of threatened, endangered, and sensitive plant species.

Desired Future Condition

In this area, alteration of the landscape is readily apparent and occurs primarily through human intervention. Rows of vigorous sand pine trees are found with an understory of neatly mowed grass. Once in a while the visitor sees the effects of natural disturbances (fires, storms, insects, and diseases). The orchard is interrupted by a few narrow road corridors. Evidence of research activities—signs, stakes, tree tags, and paint on trees—is often seen. Research and equipment storage buildings are on site. Inside a fenced nursery area near the buildings, many pots of young plants can be found. Offspring from a variety of threatened, endangered, and sensitive species are found.

Wildlife species are those that tolerate some human activity and primarily inhabit sand pine scrub or upland pine ecosystems.

The quality of water, soil, and air is high. The area is about 100 acres. An improved road provides access to buildings, and unimproved roads provide access to the sand pine orchards. Visitors are not isolated from the sights and sounds of human activity. They may encounter other people. There are no trails or recreational facilities, though interpretive displays may be present.

3.0 Special Interest Areas

These are areas of special aquatic, biotic, geologic, historic, paleontologic, or scenic values.

Desired Future Condition 3.1
Special Interest Area

Goal

To maintain a predominantly natural environment in which areas with special aquatic, biotic, geologic, historic, paleontologic, or scenic values can be preserved and interpreted for public enjoyment, study, and use.

Desired Future Condition

In all areas, except historic sites, ecosystems are found in natural conditions. Natural forces predominate and may have been supplemented by management activities intended to replace interrupted natural forces. The area provides large-size (greater than 2,500 acres) and midsize (100- 2,499 acres) patches of old growth. Physical site characteristics and vegetative features make the site unique. Wildlife species vary accordingly. Water, soil, and air are in near pristine condition. Heritage resource sites may be present. These may be degraded somewhat by natural forces—such as storms, fires, and root growth—but management activities, such as logging and road construction, have little affect.

Actions are taken to reduce looting and vandalism.

Areas range in size from one acre to thousands of acres. Some areas do not have access roads. In other areas, access roads range from unimproved dirt to paved. These roads are designed and maintained to avoid degradation of the unique features of the area. There may be nonmotorized loop trails with both interpretive facilities and facilities for comfort and safety. In areas developed for interpretation, visitors may encounter other people. At the other extreme, undeveloped areas may be remote and may lack facilities.

Special interest areas include:

1. **Savannahs** (Apalachicola NF). These wet prairies range in size from 10 to 500 acres. They are home to an unusually diverse array of herbs and grasses that can tolerate being under water several months every year and being burned every 2 to 4 years.
2. **Bradwell Tract** (Apalachicola NF). This 1,500-acre area of upland pine borders the Ochlockonee River. In the last century, it was managed as a private game farm. The area is scenic and has some sites and buildings of historical interest.

3. **Lake Bradford Tract** (Apalachicola NF). This area is managed for education, interpretation, and recreation in partnership with the Tallahassee Museum of History and Natural Science.

4. **Rocky Bluff** (Apalachicola NF). Located on a bluff overlooking the Ochlockonee River, this 225-acre area has some large specimens of bottomland hardwood trees, as well as dogwoods and redbuds.

5. **Morrison Hammock** (Apalachicola NF). This 300-acre area near the banks of the Sopchoppy River is a well-developed hardwood hammock with specimen trees of spruce pine and loblolly pine. The area also contains spring boils.

6. **River Sink** (Apalachicola NF). This 350-acre parcel encompasses a good example of a sinkhole in a karst plain. The lack of human activity in the immediate vicinity has kept the sinkhole in near-natural condition.

7. **Leon Sinks** (Apalachicola NF). Several outstanding limestone sinks and many other smaller ones make this 640-acre area unique. The sinks vary. One is sheer-walled with a beautiful pool below. Another is shallow with a clear pool. A third one is dry and has several large magnolias inside.

8. **Wallace Tract** (Apalachicola NF). This area, about 5,000 acres, contains a representative piece of upland pine forest growing on old sand dunes overlying karst. The dry conditions, unusual in this national forest, provide habitat for gopher tortoises and their rare associated species. The area also has live oak groves surrounding intermittent ponds, with unusual amphibians.

9. **Deep Creek** (Osceola NF). The corridor of Deep Creek, an Outstanding Florida Water, consists of a creek swamp with sweet bays, red maples, black gums, and loblolly pine. Shrubs include azaleas and Virginia willow, while arrowheads

and cinnamon ferns also may be found.

10. **Middle Prong of the St. Mary's River** (Osceola NF). This corridor along the St. Mary's River, an Outstanding Florida Water, is a well-developed example of a creek swamp, with large bays, black gums, loblolly pine, and red maples. Dogwoods and azaleas provide spring bloom along this scenic meandering river.
11. **Drew Grade Oak Hammock** (Osceola NF). This 350-acre area encompasses a scenic mature live oak grove.

12. **Fanny Bay** (Osceola NF). This cypress swamp, about 350 acres, includes individual cypress trees 3 feet or more in diameter above the butt swell. Located adjacent to a rest stop on Interstate 10, it offers a good opportunity for interpretation and education.

13. **Otter Bay** (Osceola NF). This area is a 1,200-acre cypress/bay swamp, the interior has been disturbed only slightly by human activity. It is a good example of a closed-canopy swamp and provides habitat for black bears.

14. **Mud Lake** (Ocala NF). This shallow, 500-acre lake has an unusual set of conditions that leads to a thick ooze developing on the bottom. This kind of ooze is the forerunner of oil-rich shale.

15. **Lake Charles and Redwater Lake** (Ocala NF). These two scenic lakes are surrounded by mature hardwood bottomlands and swamps with large trees.

16. **North Prairie and Zay Prairie** (Ocala NF). These are two wetlands in an otherwise dry scrub. They are small and mainly undisturbed.

17. **Penner Ponds** (Ocala NF). This is a scenic area of small ponds in a grove of mature hardwood.

18. **Davenport Landing** (Ocala NF). This is a prehistoric village and historic riverboat landing site.

19. **Cat Head Pond** (Ocala NF). This is a deep, 1-acre pond near Fort Gates Landing on Lake George. A small Civil War battle may have been fought nearby.

20. **Silver Glen Spring and Run** (Ocala NF). This spring with its short, deep run into Lake George is a stopping-over place for the endangered West Indian manatee.

21. **Mormon Branch** (Ocala NF). This is a subtropical swamp with a population of impressive Atlantic white cedars.

22. **Farles Prairie** (Ocala NF). This is a large and mostly undisturbed area of perched wetlands embedding in the dry scrub.

23. **Alexander Springs Creek** (Ocala NF). In this area, a clear, semitropical river runs through mature forest of hardwood, slash and loblolly pine, and palmetto swamp.

24. **Bowers Bluff** (Ocala NF). This mature hardwood hammock overlooks the St. Johns River.

25. **Blackwater Swamp** (Ocala NF). This area of mature cypress and black gum swamp drains Lake Dorr.

26. **Disappearing Creek** (Ocala NF). This is a sinkhole with a scenic, mature hardwood hammock.

27. **Sellers Lake** (Ocala NF). This is a scenic lake in the sand pine scrub.

4.0 Recreation Emphasis Areas

These areas are managed with an emphasis on varying degrees of recreational opportunities.

Desired Future Condition

Where these areas include a longleaf pine forest, the forest is open. Understory is dominated either by gallberry and palmetto shrubs or by mixtures of grasses and herbs, depending on the local moisture conditions. Dead trees—both standing and fallen—are present, as are old pine stumps. Tree trunks are apt to be blackened by frequent, low-intensity fires. Wildlife includes bobcats, bobwhite quail, cotton rats, eastern fence lizards, fox squirrels, gopher tortoises, gray foxes, rattlesnakes, and white-tailed deer.

In other places, the community found is bottomland forest. This forest usually has a closed canopy and a variety of tree species—including bay, loblolly pine, magnolia, pond pine, red maple, slash pine, spruce pine, sweetgum, tupelo, several species of oak, and, in the wettest sites, cypress. The thickness of the understory depends on the frequency of flooding. In places it is sparse and dominated by ferns, grasses, and herbs. Where shrubs are thick, they include dahoon holly, dogwoods, and wax myrtle. Animals found include bobcats, cottonmouths, king snakes, rat snakes, salamanders, flying squirrels, gray squirrels, great-horned owls, hermit thrushes, pileated woodpeckers, red-tailed hawks, raccoons, turkeys, and white-tailed deer.

The basin swamp forest has a canopy of trees such as bald cypress, black gum, pond pine, red maple, and sweet bay. The sometimes impenetrable understory consists of fetterbush, sweet gallberry, titi, Virginia willow, wax myrtle, and a tangle of vines. This thicket of species is seasonally flooded, and standing bodies of shallow water may remain year-round. Cypress swamps that occur here represent a transition between distinct wetlands and pine flatwoods. Pond cypress, black gum, and slash pine are found in this canopy, while dahoon holly and red bay may form a subcanopy. The shrub layer may range from dense to practically none. It is usually dominated by fetterbush, sweet gallberry, titi, Virginia willow, and wax myrtle. In some areas, the canopy may be missing and the community is a shrub swamp dominated by such species as fetterbush and titi.

Where patches of pine forest occur, they are open, with an understory sometimes dominated by shrubs, such as gallberry and palmetto, and sometimes by a mixture of grasses and herbs, depending on the elevation of the site. The parklike openness may be interrupted by the dense vegetation of wetland inclusions, small hardwood patches, and areas of titi. Some very old longleaf pine trees with distinctive flattops are easily spotted. Dead trees—both standing and fallen—are present, as are old pine stumps. Because of prescribed fires and wildfires, tree trunks may appear blackened.

Wildlife species in the area are those that prefer large areas of relatively undisturbed habitat. Amphibians and reptiles are common in these still-water swamps—including alligators, brown and

banded water snakes, cottonmouths, snapping turtles, and tree frogs. Birds such as barred owls, kites, wood ducks, and yellow-crowned night herons are common. Swamp mammals include cotton mice, otters, and southeastern shrews. Black bears are found here and perhaps Florida panthers. Patches of pine forest are home to bobcats, quail, rabbits, rat snakes, rattlesnakes, skunks, and white-tailed deer.

Other areas may be prairies. These are marshy, shallow lakes full of wetland herbs—such as American lotus, knotweed, panic, pennywort, redroot, reeds, spikerush, and water primrose. Wildlife includes amphibians, reptiles, and wetland birds—including two-toed amphiumas, green tree frogs, pig frogs, leopard frogs, alligators, eastern mud snakes, green water snakes, black swamp snakes, great blue and little blue herons, great and snowy egrets, tri-colored herons, bald eagles, and northern harriers.

Desired Future Condition 4.1
Minimum Development, Nonmotorized

Goal

To provide a predominantly natural environment that gives a strong feeling of remoteness and in which there are opportunities to practice wildland skills and feel self-reliant. To provide opportunities for nonmotorized recreation.

Desired Future Condition

The most common vegetative community in this area is the basin swamp. The landscape is predominantly natural, with little remaining evidence of historical human disturbance. The vegetation patterns are shaped by natural processes such as floods, fires (including prescribed fire), storms, insects, and diseases. Little active timber management occurs here. Snags and downed wood are common. There may be evidence of fire, but since the area is predominantly wetland, fires are not common. Barring natural catastrophe, the forest is old. The area provides midsize patches of old growth (100-2,499 acres). The area is interrupted occasionally by a narrow road or a trail corridor, and facilities such as primitive camping areas may be encountered.

The quality of soil, water, and air is high. The area is large, usually 1,000 acres, although some areas are smaller because of particular physical features that enhance the feeling of isolation. Streams with primitive boat access sites and nonmotorized- use trails provide the only public access into the area. People using the area may be canoeing, hiking, hunting, or horseback riding. Visitors are usually isolated from the sights and sounds of human activity. Few, if any, other people are encountered. A few level 1 camping areas and a few interpretive signs may occur.

A few roads may exist in the area, but vehicles seen may be for administrative purposes. Most roads have native surfacing and are level with the surrounding ground; in low areas, roads may have ditches or be above the surrounding ground. A few low-drainage points (bay crossing, streams, etc.) have low-water rock crossings.

Desired Future Condition 4.2
Minimum Development, Motorized

Goal

To provide a predominantly natural environment that gives the visitor a feeling of remoteness, where there are ample opportunities to practice wildland skills and achieve feelings of self-reliance. To provide opportunities for motorized recreation, where there are few roads.

Desired Future Condition

The landscape is predominantly natural with some evidence of human disturbance. The vegetation patterns are shaped by natural processes—such as floods, fires (including prescribed fire), storms, insects, and diseases. The area provides large-size (greater than 2,500 acres) and midsize (100-2,499 acres) patches of old growth. In addition, there are a few small openings in the forest where vegetation has been modified to enhance recreational pursuits—such as off-highway vehicle use, hunting, nature photography, and wildlife viewing. Occasionally, the landscape is interrupted by narrow road and trail corridors and small rustic facilities such as campsites.

The quality of soil, water, and air is high. In some cases, the area is more than 2,000 acres. In other cases, it is smaller but may seem isolated because of lack of development in the surrounding area. Access is provided by a few unpaved roads, trails, and rivers and streams with a few primitive and rustic boat access sites. People using the area are usually there for recreation activities, both motorized and nonmotorized. At the few rustic facilities that exist, visitors may find level 1 camping areas, interpretive kiosks, and brochures.

On the roads that exist in the area, traffic may be encountered occasionally. Roads have native surfacing and conform in height to the surrounding ground. In low areas, roads may have ditches or be raised. A few low-drainage points (bay crossing, streams, etc.) have low-water rock crossings. Most roads are rough and irregular, and travel with low-clearance vehicles is challenging. Some old roads may be used as motorized-use trails.

Desired Future Condition 4.3
Low Recreational Development

Goal

To provide a largely unmodified natural environment with a low level of recreational development that may be experienced by people via motorized access into the area.

Desired Future Condition

Ecosystems are found in a largely unmodified condition where natural forces predominate and evidence of human influence is muted. Vegetation patterns are shaped by natural processes—such as fires (including prescribed fire), storms, insects, and diseases. The area provides midsize

patches of old growth (100-2,499 acres). Roads are dense enough to modify the natural forest with frequent, artificial edges and corridors. In many of the areas, forests have old trees.

The quality of soil, water, and air is high. Heritage resource sites are likely to occur here. Roads are the primary access, and some of these roads may be paved. The visitor may not become completely isolated from the sights and sounds of other people. Primitive and rustic boat access sites are present, as are trails. People using them may be driving for pleasure, hiking, horseback riding, riding motorized recreation vehicles, or hunting. Both motorized and nonmotorized camping occur at level 1-2 camping areas. Signing, safety, and sanitation facilities may be present, as well as displays, presentations, and publications.

Most roads have native surfacing and are the height of the surrounding ground. In low areas, they may have ditches. Low-drainage points usually have low-water rock crossings. These roads are rough and irregular, making travel with low-clearance vehicles difficult. Other roads have a sand-clay surfacing, are higher than the surrounding ground, and have ditches. These roads are apt to have culverts or bridges at water crossings. Although roads are of fair standard, they may not be stable during bad weather. Rutting, roughness, and dust are present most of the time. A few higher-standard roads, with limerock or paved surfacing, may be found. These are stable and smooth most of the time.

Desired Future Condition 4.4
Moderate Recreational Development

Goal

To provide a predominantly natural-appearing environment with a moderate level of recreational development that may be experienced by people via motorized access into the area.

Desired Future Condition

The landscape appears largely natural. Vegetation patterns are mostly shaped by natural processes—such as fires (including prescribed fire), storms, insects, and diseases. However, roads are common and create unnatural patterns on the landscape. The occasional recreational facilities—such as boat access sites, picnic areas, and camping areas—also create unnatural patterns on the landscape. Trees may reach a very old age, and some may have become snags. The area provides large-size (greater than 2,500 acres) and midsize (100- 2,499 acres) patches of old growth. Occasionally the visitor sees a lightning-struck tree. Fires are rare in wetter areas, but blackened tree trunks may be seen in drier areas, where low-intensity fires are frequent.

The quality of soil, water, and air is high. Heritage resource sites are likely to occur here. Access is provided primarily by roads. Recreation often centers around water—either lakes, rivers, or streams. The visitor often sees others involved in recreation activities. There is a feeling of freedom and independence but with little challenge and risk. Within the forested areas, nature enthusiasts and hunters are present occasionally. Motorized- and nonmotorized-use trails may be seen, particularly adjacent to water. Along these trails, facilities exist for the comfort and

convenience of the user. Primitive, rustic, and developed boat ramps provide access to water. On-site controls are often present. Artificial nest structures (wood duck boxes) may be seen along and near the shoreline. Levels 1-3 camping areas can be found in the area.

Most roads are built to a low standard, have native surfacing, and conform in height to the surrounding ground. In low areas, they may have ditches and be above the surrounding ground. A few low-drainage points have low-water rock crossings. These roads are rough and irregular, making travel with low-clearance vehicles difficult. Higher-standard roads have a sand-clay surfacing, are higher than the surrounding ground, and have ditches. Drainage structures on these roads are culverts and, occasionally, bridges. These roads may not be stable during bad weather conditions. They have some rutting, roughness, and dust or mud present most of the time. A few higher-standard roads, with limerock or paved surfacing, are found. These are stable and smooth most of the time.

Desired Future Condition 4.5
Developed Recreation Area

Goal

To provide a substantially modified setting in which recreation facilities are designed to allow a high degree of social interaction.

Desired Future Condition

In this area, the environment appears to have been modified. From a distance the vegetation patterns appear to be shaped by natural forces, but on closer inspection, many alterations have occurred and often the result is a landscaped look. Trees may be old and may add character to the site. Improvements—such as road and trail corridors, recreation facilities, and power lines—are common. Within primary recreation use area, a brushy understory may exist and function as a screen between camping units to create a more enclosed environment, or the area may be open and parklike with swimming beaches and picnic tables. Snags are not common, but tree trunks may be somewhat blackened from prescribed fires. Some nonnative vegetation may be present. Wildlife and fish habitat improvements (including fishing piers, boat launches, and fish structures) may be present. Also, wood duck nesting boxes may be seen on small water bodies throughout the area.

Species tolerant of human activity may be present. Visitors may see cotton mice, gray squirrels, golden mice, eastern cottontails, nine-banded armadillos, opossums, raccoons, striped skunks, barred owls, blue jays, Carolina wrens, chipping sparrows, common crows, common nighthawks, mockingbirds, and turkey vultures. Reptiles and amphibians include anoles, corn snakes, eastern box turtles, green tree frogs, ground skinks, and southern fence lizards.

The quality of soil, water, and air is high. Identified heritage sites are protected and interpreted. Roads of a high standard provide the main access. For people using the area, social interaction is high and is a key component of the experience. Isolation from the sights and sounds of other humans is rare. The primary use area

may have many facilities. They are designed for the convenience of the user—such as boat access sites, buildings, campsites, interpretive features and services, paved and unpaved parking areas, sanitary structures, signs, and utility structures. Fishing piers, short interpretive trails, swimming beaches, and picnic facilities including group shelters may be provided. Campsite facilities may be present within a wide range of design standards to accommodate a full spectrum of private camping vehicles. Structures to protect soil, water, and vegetation are evident. They may include barrier posts, gates, gabions, and water bars.

Most roads have paved surfacing, are slightly above the height of the surrounding ground, and have ditches. Drainage structures consist of culverts. These roads are very high standard, are stable and smooth, and have little or no dust. Other roads have sand-clay or limerock surfacing but, otherwise, conform to the description of paved roads.

5.0 Hardwood/Cypress Forest

These are areas of predominantly bottomland hardwood and cypress/gum swamps.

Desired Future Condition

Ecosystem is bottomland hardwood bordering a river and cypress/gum swamps, with slightly elevated ridges that have an overstory of scattered pine. Bottomlands are covered by a closed-canopy forest of tall, straight trees. These include cypress, loblolly bay, red maple, river birch, southern magnolia, spruce pine, sweetgum, tupelo, and several oak species. Understory may be either open—with ferns, herbs, and grasses—or dense and shrubby. Shrubs may include azaleas, briers, dahoon holly, dogwoods, poison ivy, silverbells, and wax myrtle. The elevated ridges support a sparse pine overstory of slash and pond pine with a dense understory of bay, blueberry, gallberry, and palmetto.

Wildlife species are those that thrive in riverine wetlands—bird-voiced tree frog, acadian flycatcher, barred owl, black bear, bobcat, cottonmouth, five-lined skink, marbled salamander, pileated woodpecker, raccoon, red-tailed hawk, and wood duck.

Roads, rivers, and trails provide access to the area. Visitors may find a feeling of freedom and independence but with little challenge and risk. The sense of isolation from the sights and sounds of humans ebbs and flows with the coming and going of river traffic. Within forested areas, wildlife viewers and hunters are present occasionally. Motorized- and nonmotorized-use trails may be seen, particularly adjacent to rivers. Along these trails, facilities exist for the comfort and convenience of the user. Primitive, rustic, and developed boat ramps provide access to the river. Interpretive displays and signs may be present. Wood duck boxes may be seen along the river's shoreline.

The quality of soil, water, and air is high. Most roads are low standard and may be difficult to travel with low-clearance vehicles. These have native surfacing. In low areas, they may have ditches or

low-water rock crossings. Travel with low-clearance vehicles may be difficult. A few higher-standard roads have a sand-clay surfacing, are higher than the surrounding ground, and have ditches. In low areas, these have culverts or, occasionally, bridges. Even these roads may not be stable during bad weather conditions, and they have some rutting and dust or mud most of the time.

Desired Future Condition 5.1
No Hardwood/Cypress Timber Production

Goal

To retain hardwood forests with minimum disturbance, while providing for harvest of pine islands and ridges in the area and along its margins. To provide habitat for healthy populations of bald eagles.

Desired Future Condition

Bottomlands are found in their natural condition with little evidence of human disturbance. Vegetation patterns are shaped by natural processes—including floods, storms, insects, and diseases. The area provides large-size (greater than 2,500 acres) and midsize (100-2,499 acres) patches of old growth. Fires are rare in wetlands, so evidence of them—such as blackened tree trunks and plowed firelines—is almost nonexistent. Snags are often seen. Barring natural catastrophe, bottomland forests are old. The slightly elevated pine ridges, by contrast, show evidence of human activity, including openings created by timber harvest. Here, fire is more common, and blackened tree trunks are evident. Infrequently the landscape may be interrupted by narrow roads.

Openings in the pines are scattered here and there. In some of these openings, there may be green stumps of recent origin, piles of bark and branches, and broken shrubs. The size of the openings and the patterns of seedlings and saplings growing up in them match the pattern seen in nearby pine-dominated parts of the forests. Within recently harvested areas, patches of bare soil may exist.

Desired Future Condition 5.2
Hardwood/Cypress, Timber Production

Goal

To produce moderate-size hardwood sawtimber, using techniques that preserve the natural character of the area.

Desired Future Condition

Landscape is mostly natural appearing but has evidence of human disturbance throughout the area. The vegetation patterns are the result of both natural processes (floods, fires, insects, and diseases) and small, frequent timber harvests. The canopy is almost continuous, but openings up to 40 acres occur. Within recently harvested areas, patches of bare soil may exist. In old harvest areas, stump sprouts may be in various stages of regrowth. In other parts of the area, trees from saplings to small trees in the subcanopy to moderate-size trees may be found. Trees may reach a moderate age of 100 years. Snags are seen. There is an occasional lightning struck tree, but only rarely is there evidence of fires. Narrow roads, trail corridors, and rustic facilities occasionally interrupt the landscape.

The wildlife community is dominated by those species requiring hardwood forests or riparian habitat, but tolerant of some brushy openings. Birds include great horned owls, pileated woodpeckers, prothonotary warblers, red-shouldered hawks, white-eyed vireos, and yellow-breasted chats. Among the mammals are bobcats, gray foxes, gray

squirrels, and raccoons. The reptile and amphibian community is diverse and could include frogs (carpenter, green tree, ornate chorus, and pig), snakes (cottonmouth, eastern mud, king snake, and rough green), toads (eastern narrowmouth, oak, and southern), salamanders (eastern newt, marbled, spotted dusky, and southern dusky), and turtles (alligator snapping and box).

6.0 Longleaf and Slash Pine

These areas are predominantly longleaf and slash pine forests with a large patch size structure (10 to 80 acres).

Desired Future Condition

The area is a mixture of upland pine, pine flatwoods, and basin wetlands. The scale of this mixture varies from one forest to another. The upland pine community is dominated by longleaf pine with an understory of grasses, herbs, and very low shrubs. Wiregrass is common in this understory. Herbs include golden-asters, goldenrods, and partridge peas. Several kinds of oak are among the shrubs, and some oaks have grown into tree size, forming little oak inclusions in the pine forest. At slightly lower, wetter elevations, the upland pine merges into pine flatwoods. Longleaf pine and wiregrass are common. The wetter an area is the more likely it is to become a mosaic of longleaf and slash pine. Palmetto and gallberry also become more common in the understory. In basin wetlands, including stringers, slash and pond pine are likely to be found—as are black gum, cypress, and red maple. Shrubs include fetterbush, titi, and Virginia willow. Herbs that require very particular conditions are apt to be found in narrow bands of this moisture gradient from upland to basin, making the species diversity across these communities quite rich. Frequent fire keeps the understory low in the upland pine and pine flatwoods. It also keeps the titi-dominated margins of the basin wetlands narrow.

Birds include red-bellied woodpeckers, RCWs, brown-headed nuthatches, Bachman's sparrows, and southeastern kestrels. Among the mammals are black bears, bobcats, gray foxes, raccoons, and white-tailed deer. Gopher tortoises and other species that share their burrows live here, as do black racers, fence lizards, narrowmouth toads, oak toads, and red rat snakes. The basin wetlands attract species that like water—such as a variety of salamanders and frogs, snakes (such as cottonmouths and mud snakes), and birds (such as barred owls and wood ducks).

The quality of the water, soil, and air is high. Heritage resource sites are likely to be dispersed throughout the area.

The area is thousands of acres. Roads provide the main access. In some places visitors may encounter other people and activities of various sorts. While in other areas, visitors may be quite isolated. Recreational facilities—such as camping areas, fishing access sites, and trails—are found occasionally, some with signs, interpretive displays, and other facilities for the comfort and convenience of the user.

Some roads have native surfacing and are rough and irregular. In low areas, these usually have ditches and are above the surrounding ground. Some low-drainage points have low-water rock crossings. Travel with low-clearance vehicles is difficult. Other roads have a sand-clay surfacing, are higher than the surrounding ground, and have ditches. In low areas, these roads may have culverts or bridges. These roads may not be stable during bad weather conditions. Rutting, roughness, and dust may be present most of the time. A few higher-standard roads, with limerock or paved surfacing, will be found. Limerock roads are stable and smooth most of the time. Paved roads are stable and smooth. Remnants of roads leading from permanent roads to small openings can be seen.

Desired Future Condition 6.1
Longleaf/Slash Pine, RCW Management

Goal

To provide a predominantly natural-appearing environment that provides habitat necessary to sustain a viable RCW population over a large area. To produce poletimber and large pine sawtimber in a manner compatible with RCW population viability. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

The landscape is natural appearing but does contain evidence of human disturbance. Vegetation patterns are the result of both natural processes (including fires, storms, insects, and diseases) and human disturbances. The viewer notices timber harvest openings, about 25 acres, throughout the forest. Very recent openings occupy approximately 1 percent of the area. These have green stumps, patches of bare soil, piles of bark and branches, and broken shrubs. Within a few years these fill in with young pine trees. Individual stands usually contain trees that are all the same age, though some stands have two age classes, and a few stands are mixed in age. Very old longleaf pine trees with distinctive flattops are sparsely distributed throughout the area. There may be evidence of frequent, low-intensity fires. Tree trunks are blackened, understory is low, and the stringers of swamp vegetation are narrow. Snags are present. Evidence of firelines is rarely seen. In addition, the landscape may be interrupted occasionally by narrow road and trail corridors and facilities, such as rustic camping areas.

The upland pine and pine flatwoods are inhabited by RCWs. Mature flattop longleaf and slash pine with either natural or artificial cavities are seen throughout these communities.

Desired Future Condition 6.2
Longleaf/Slash Pine, RCW Management, Cattle

Goal

To provide a predominantly natural-appearing environment that provides habitat necessary to sustain a viable RCW population over a large area. To produce pole-timber and large pine sawtimber in a manner compatible with RCW population viability. To produce forage for cattle. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

Landscape is natural appearing but does contain evidence of human disturbance. Fences are apparent, and grazing cattle may be seen occasionally. Vegetation patterns are the result of both natural processes (including fires, storms, insects, and diseases) and human disturbances. The viewer notices timber harvest openings, commonly about 25 acres, throughout the forest. Very recent openings occupy approximately 1 percent of the area. These have green stumps, patches of bare soil, piles of bark and branches, and broken shrubs. Within a few years these fill in with young pine trees. Individual stands usually contain trees that are all the same age, though some stands have two age classes, and a few stands are thoroughly mixed in age. Very old longleaf pine trees with distinctive flattops are sparsely distributed throughout the area. There may be evidence of frequent, low-intensity fires. The tree trunks are blackened, understory is low, and stringers of swamp vegetation are narrow. Snags are present. Firelines are rare. In addition, the landscape may be interrupted occasionally by narrow road and trail corridors and facilities, such as rustic camping areas.

The upland pine and pine flatwoods are inhabited by RCWs. Mature flattop longleaf and slash pine with either natural or artificial cavities are seen throughout these communities.

Desired Future Condition 6.3
Longleaf/Slash Pine, No RCW Management

Goal

To provide a predominantly natural-appearing environment that produces poletimber and large pine sawtimber. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

Landscape is natural appearing but does contain evidence of human disturbance. Vegetation patterns are the result of both natural processes (including fires, storms, insects, and diseases) and human disturbances. The viewer notices timber harvest openings, commonly approximately 40 acres, throughout the forest. Very recent openings occupy approximately 1 percent of the area. These have green stumps, patches of bare soil, piles of bark and branches, and broken shrubs. Within a few years these fill in with young pine trees. Individual stands usually contain trees that are all the same age, though some stands have two age classes, and a few stands are thoroughly mixed in age. There may be evidence of frequent, low-intensity fires. Tree trunks are blackened, understory is low, and the stringers of swamp vegetation are narrow. Snags are present. Firelines are rarely seen. In addition, the landscape may be interrupted occasionally by narrow road and trail corridors and facilities, such as rustic camping areas.

Desired Future Condition 6.4
Longleaf/Slash Pine, No RCW Management, Short Rotation

Goal

To produce moderate-size pine sawtimber using techniques that promote the rapid establishment and growth of the trees. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

The landscape appears to have been modified to a moderate degree through human intervention. Vegetation patterns are primarily the result of frequent timber harvests. The viewer notices openings, commonly about 80 acres, throughout the forest. Very recent openings occupy approximately 2 percent of the area. These have green stumps, patches of bare soil, piles of bark and branches, and broken shrubs. Within a few years these fill in moderately densely with young pine trees that may have been planted in rows or may have seeded naturally from the few remaining overstory trees. Trees in a stand may be all the same age, they may be of two distinct age classes, or occasionally they may be of mixed ages. Oldest trees usually reach a moderate age of 80 years. There may be evidence of frequent, low-intensity fires. Tree trunks are blackened, understory is low, and the stringers of swamp vegetation are narrow. Snags and lightning-struck trees are present. Plowed firelines are rare. In addition, the landscape may be interrupted occasionally by narrow road and trail corridors and facilities, such as rustic camping areas and boat access sites.

Wildlife species that prefer openings and disturbed sites are common. Visitors may encounter bobwhite quail, crows, mockingbirds, mourning doves, opossums, pine warblers, raccoons, red-tailed hawks, turkey and black vultures, and white-tailed deer. Snags in the area provide sites for cavity nesting birds that prefer open habitat for foraging or tolerate a fragmented landscape. These include eastern bluebirds, flickers, great crested fly-catchers, tufted titmice, and red-bellied, red-headed, and downy woodpeckers.

Desired Future Condition 6.5
Energy Wood

Goal

To produce very high levels of energy wood, and, where the opportunity exists, to help meet sewage disposal needs of adjacent communities.

Desired Future Condition

Landscape appears to have been highly modified through human intervention. Vegetation patterns are primarily the result of very frequent timber harvests, though buffers around the intensely harvested areas are natural appearing. Harvests result in numerous openings in the forest, each one is usually 20 to 40 acres. Very recent openings have much bare soil and little slash pine remaining on the ground. Within a few years these fill in with dense rows of young pine or hardwood. Each stand has trees that are all the same size. The oldest trees are about 8 years old and typically 35 to 40 feet tall, with trunks 5 to 6 inches in diameter. There are buffers of

older trees and shrubs around wetland inclusions. Snags and lightning-struck trees are seldom seen. The only evidence of fire comes from infrequent wildfires. The landscape is interrupted frequently by road corridors.

This agricultural forest has a very dense and uniform appearance. On upland sites, trees may be either pine or hardwood (including cottonwood, sweetgum, and sycamore), depending on which species yields the greatest volume of biomass. There is no understory in the intensely managed area. Wetland inclusions are not directly managed. They also have buffers of natural-appearing pine forest around them. Wildlife consists of species that tolerate disturbance. These include crows, opossums, and raccoons. Wetland inclusions have a natural fauna that includes frogs and salamanders.

The quality of the water, soil, and air is within State standards. Within stands that have been harvested recently, mechanically created patches of bare soil may cover 90 percent of the area. After fertilization, these soils have significantly higher nutrient levels than would be found under more natural conditions. Heritage resources may be of a dispersed, rather than clustered, nature. They may have been degraded significantly by a combination of natural forces (fires, storms, and root growth) and human activities such as timber harvesting and road building.

Generally the area is at least 500 acres. Roads provide the main access. If the area is fertilized by the spraying of sewage effluent, access to the area is restricted. If not, access is open. Trails, camping areas, and recreational or interpretive facilities do not occur here, although displays about the area may be found off-site.

7.0 Longleaf and Slash Pine Adaptive Management

These areas are predominantly longleaf and slash pine forests with a diverse patch size structure (¼-80 acres).

Desired Future Condition

An adaptive management approach is emphasized in this area. Harvest methods that have limited operational application are applied and tested here. Monitoring and close coordination with research provide feedback for adjustments in the desired future condition.

During the next two decades in the future, portions of the longleaf pine forests are characterized by patches ranging between ¼ and 2 acres where longleaf pine regeneration is found. These areas will begin to take on an uneven-aged structure. Patches up to 80 acres are found in other areas where longleaf pine is restored. These areas will have an even-aged structure. A few patches up to 80 acres in size are found in the slash pine and loblolly pine forest types with a two-aged appearance.

After the next two decades, the area may take on another appearance. Monitoring and research may show that operational application of regenerating longleaf pine

in small patches or regenerating slash and loblolly pine under canopies does not provide the conditions envisioned. The vision for the area may change to a different mixture of patch sizes and stand structures. As the forest ages, there will be more opportunities to provide two-aged patches of slash, loblolly, and longleaf pine. Even-aged patches of longleaf pine restoration up to 80 acres may continue to occur.

The area contains a mosaic of plant communities, depending mostly on moisture conditions. Drier sites are upland pine dominated by longleaf pine, with an understory of wiregrass, low oak shrubs, and a variety of herbs. Patches of medium to large hardwood, especially oak species, are scattered throughout. On wetter sites are pine flatwoods where longleaf pine is apt to be joined by slash, loblolly, and pond pine. Understory vegetation is commonly dominated by palmetto and gallberry, though wiregrass is present. Along drainages and in basins are black gum, cypress, red maple, and other hardwood with titi and wax myrtle in the understory and along the margins.

The different plant communities are not separated by sharp boundaries, but change from one type to another gradually in response to fluctuations in water level and fire history. Occasionally fires may enter wetlands. Vegetation patterns are primarily the result of fires (including prescribed fires), hydrology, and timber-cutting activities. The pine canopy is open and parklike. Stumps are scattered throughout the forest, or they occur in groups in canopy openings. Pine regeneration is found in a variety of patch sizes from ¼ to 80 acres. The oldest, largest pine trees are flattopped, and many exceed 200 years in age. Snags, downed trees, and lightning-struck trees are present. Much of the area would have old-growth conditions at any one time. The area provides small-size patches of old growth (1-99 acres) unsuitable for timber production.

Wildlife includes species that prefer mature longleaf and slash pine forests. Birds include Bachman's sparrows, brown-headed nuthatches, red-bellied woodpeckers, RCWs, and southeastern kestrels. Mammals include black bears, bobcats, gray foxes, raccoons, and white-tailed deer. Go-

pher tortoises live here, along with numerous other species that share their burrows. Black racers, fence lizards, narrowmouth toads, oak toads, and red rat snakes also are found here. Basin wetlands attract species that like water—such as a variety of salamanders and frogs, snakes (including cottonmouths and mud snakes), and birds (including barred owls and wood ducks).

The quality of soil, water, and air is high. Smoke from prescribed fires may be present. Wetlands show no evidence of draining, vehicular activity, or manipulation. Heritage resource sites may be dispersed throughout the area.

Generally, the area is large and continuous. Roads provide the main access. In some places, visitors may encounter other people and activities of various sorts. While in other places, visitors may be quite isolated. Recreational facilities—such as camping areas, fishing access sites, and trails—are found occasionally. Some of these have signs, interpretive displays, and other facilities for the comfort and safety of the user.

Most of the roads have native surfacing and are rough and irregular. In low areas, these usually have ditches and are above the surrounding ground. Many low-drainage points have low-water rock crossings. Travel with low-clearance vehicles is difficult. Other roads have sand-clay surfacing, are higher than the surrounding ground, and have ditches. In low areas, these may have culverts or bridges. These roads may not be stable during bad weather conditions. Rutting, roughness, and dust are present most of the time. A few higher-standard roads with limerock surfacing or pavement will be present. These are stable and smooth all the time. Remnants of roads leading from permanent roads to small openings can be seen.

Desired Future Condition 7.1
Longleaf/Slash Pine, Adaptive Management, RCW Management

Goal

To allow or mimic natural processes and patterns to maintain a rich diversity of native plants and animals, including the red-cockaded woodpecker. To produce poletimber and large pine sawtimber. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

The vision for this area is the same as in DFC 7.0, except this area is within an RCW habitat management area (HMA). Mature flattop longleaf and slash pine with woodpecker cavities are seen throughout the pine forests. Much of the area would have old-growth conditions at any one time. The area provides small-size patches of old growth (1-99 acres) unsuitable for timber production. Frequent, low-intensity fires are indicated by blackened tree trunks and open, parklike stands with little or no midstory near RCW clusters. Grazing cattle are not found here.

Desired Future Condition 7.2
Longleaf/Slash Pine, Adaptive Management, RCW Management, Cattle

Goal

To allow or mimic natural processes and patterns to maintain a rich diversity of native plants and animals, including the red-cockaded woodpecker. To produce poletimber and large pine sawtimber. To provide forage for cattle grazing. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

The vision for this area is the same as in DFC 7.0, except this area is within an RCW HMA and cattle grazing is allowed. Mature flattop longleaf and slash pine with woodpecker cavities are seen throughout the pine forests. Much of the area would have old-growth conditions at any one time. The area provides small-size patches of old growth (1-99 acres) unsuitable for timber production. Frequent, low-intensity fires are indicated by blackened tree trunks and open, parklike stands with little or no midstory near RCW clusters.

Desired Future Condition 7.3
Longleaf/Slash Pine, Adaptive Management, No RCW Management

Goal

To allow or mimic natural processes and patterns to maintain a rich diversity of native plants and animals. To produce poletimber and large pine sawtimber. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

The vision for this area is the same as in DFC 7.0, except this area is not within an RCW HMA. Grazing cattle are not found

here. Much of the area would have old-growth conditions at any one time.

8.0 Sand Pine and Oak Scrub

These areas are predominately sand pine and oak scrub that are found on the Ocala NF.

Desired Future Condition

Sand pine scrub is an ecosystem where disturbance of the landscape is readily apparent. The ecosystem is adapted to go through a cycle in which intense wildfires kill all the above-ground vegetation, then the vegetation grows up, only to burn again in 20 to 80 years. Species native to this ecosystem depend on the cyclic opening and regrowth to find their special habitats. In this area, wildfires are suppressed and openings are primarily created by timber harvests. These are similar in their effects to wildfires, though they are usually smaller than wildfires and leave less deadwood on the site. The pattern of the landscape is largely the result of human activity. Wildfires, and occasionally prescribed fires done for experimental purposes, are responsible for some patches of blackened, dead trees and burned understory. Plowed firelines may be encountered around these patches. In addition, the landscape is interrupted often by narrow road corridors.

Plants that typify this ecosystem are sand pine and shrubs—such as Chapman's oak, myrtle oak, palmetto, rosemary, rusty lyonia, sand live oak, scrub oak, and the endemic Calamintha. Herbs in the young scrub include beakrush, milk pea, and several rare species, including Florida bonamia, scrub buckwheat, and small Lewton's milkwort. This area is notable for having the highest diversity of rare scrub plant species. Also noteworthy are the animals that are scrub endemics—such as the Florida mouse, Florida scrub-jay, Florida scrub lizard, and sand skink. In addition, the sand pine-scrub oak community contains wildlife common to disturbed forested conditions—including bobwhite quails, Carolina wrens, common nighthawks, eastern coachwhips, eastern cottontails, gopher tortoises, gray foxes, racers, rufous-sided towhees, scarlet snakes, southern toads, southern fence lizards, and white-tailed deer.

In recent openings, there are green stumps, broken shrubs, and piles of bark and branches, left behind to fertilize the site as they decay. Some live trees remain, left behind to provide perches and cavities for birds. Soil surface is mostly bare sand. Within 3 years, the opening is full of knee-high shrubs, especially oak species, and small sand pine seedlings can be found among them. In this young scrub, flowering herbs add splashes of color. Ten years later, the sand pine has begun to overgrow the oak shrubs and the area may be impenetrable. Herbs die back as the ground becomes too shaded for them. In 20 more years, sand pine trees are 60 feet tall and shrub understory is 10 feet tall. The ground becomes covered with leaf litter and lichens. In the following few decades, trees become a little thicker and Spanish moss hangs on them. Most stands of trees are harvested in this stage, and the cycle begins again for them. If a fire or timber harvest did not start the cycle over, sand pine trees gradually would die out by age 70 to 90, leaving an oak-dominated

scrub that would grow into an oak hammock.

The quality of water, soil, and air is high. Heritage resource sites are not common in this ecosystem.
Roads provide the primary access. People riding or driving off-highway vehicles are common users and may be encountered on the frequent tracks in the area. Occasionally administrative and timber harvest vehicles are seen. Few facilities are found; but some interpretive displays, signs, and facilities for the comfort and convenience of the user may be present.

Most roads have native surfacing, conform in height to the surrounding ground, and have no ditches. These roads are low standard and are rough and irregular. Travel with low-clearance vehicles is difficult. Other roads have a sand-clay surfacing and have ditches. Drainage structures consist of culverts. These roads are of a fair standard but may not be stable during bad weather conditions. Rutting, roughness, and dust are present most of the time. A few higher-standard roads, with limerock or paved surfacing, will be found. The limerock roads are stable and smooth most of the time. Paved roads are stable and smooth all the time. Remnants of roads leading from permanent roads to openings can be seen.

Desired Future Condition 8.1
Sand Pine, Natural Regeneration, Large Openings

Goal

To produce pine pulpwood under conditions that promote the growth and perpetuation of the species endemic to the Big Scrub area within the Ocala National Forest. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

The area is at least 10,000 acres. Openings up to 320 acres are scattered here and there. Most seedlings are the result of natural regeneration, so they are not in rows and their density can be quite variable from site to site. About 5 percent of the stands are left to grow older. In these, trees start to lean and some die, giving the stand an increasingly open, crooked, and picturesque look.

Desired Future Condition 8.2
Sand Pine, Mixed Regeneration, Moderate Openings

Goal

To produce pine pulpwood under conditions that balance efficient timber production practices with practices that promote the growth and perpetuation of species native to the Big Scrub area within the Ocala National Forest. To provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

The area is about 150,000 acres. Openings up to 160 acres are scattered throughout. Most seedlings are the result of artificial regeneration, while some seedlings are the result of natural regeneration, so they are not in rows and their density can be variable from site to site. The area is managed on a 50-year rotation. About 5 percent of the stands are left to grow older. In these, trees start to lean and some die, giving the stand an increasingly open, crooked, and picturesque look.

Desired Future Condition 8.3
Sand Pine, Artificial Regeneration, Small Openings

Goal

To produce pine pulpwood at a moderately high intensity level and to provide a wide range of opportunities for people to use and experience the forest.

Desired Future Condition

An area of sand pine scrub that is managed on a 50-year rotation with clearcuts up to 120 acres. Artificial regeneration using genetically improved seed is encouraged, as is a stocking density that maximizes the production of high-quality wood fiber.

Desired Future Condition 8.4
Scrub-Jay Management Area

Goal

To provide conditions favorable to perpetuate Florida scrub-jay and other species that require young oak scrub and inhabits the Big Scrub area within the Ocala National Forest.

Desired Future Condition

In this area, the vegetation pattern consists of a mosaic of oak scrub patches, each from about 80 to 200 acres in size and each a different age than its neighbor. Each patch is burned at 10- to 20-year intervals. This is done to keep the oak shrubs 3 to 10 feet tall and much exposed bare sand on the ground. The area looks different from the sand pine scrub in other management areas, because this area has only a very low density of sand pine overstory. Sand pine is deliberately removed by clearcutting, followed by frequent prescribed burns that kill sand pine seedlings as they try to establish. These conditions remain suitable for Florida scrub-jays for the next 15 to 20 years, but they gradually deteriorate as the shrubs fill in and the bare sand becomes covered with litter. At this point, the patch is burned to reset the conditions for the scrub-jay and other species. Evidence of plowed firelines around previous fires is frequently encountered. The landscape is interrupted by narrow road corridors.

Roads and trails provide access. A visitor may encounter others along these roads and trails, off-highway vehicle users and horseback riders among them. A loop interpretive trail with displays may be found in the area, which attracts nature enthusiasts. However, other sorts of recreational facilities, such as camping and picnic areas, are not found here.

Most roads have native surfacing, conform in height to the surrounding ground, and have no ditches. These roads are low standard and are rough and irregular. Travel with low-clearance vehicles may be difficult.

9.0 Special Administration

These are areas with special administrative conditions such as the Pinecastle Bombing Range, the forest/urban interface, and small tracts of land administered by the Forest Service on Eglin Air Force Base.

Desired Future Condition 9.1
Pinecastle Bombing Range

Goal

To provide an area with frequent disturbance, managed for rare scrub endemic species such as Florida scrub-jay, that may be used for training air squadrons in air-to-ground warfare.

Desired Future Condition

Vegetation patterns are primarily the result of activities associated with prescribed fire, wildfire, or bombing. Together, these create numerous openings in the sand pine canopy, some of which can be very large. These openings are filled with scrub vegetation in various stages of recovery from having been burned or crushed. Since this ecosystem is adapted to a high level of disturbance, especially by intense wildfires, bombing activities leave it more natural than might be expected. Evidence of fires is seen in the form of dead trees, both standing and fallen. In addition, the landscape is interrupted occasionally by narrow road corridors, observation towers, and bomb targets consisting of aircraft hulks, banners, cleared areas, concentric circles with large poles, gun emplacements, mock airstrips, tanks, and vehicle hulks. Bombs, both practice and live, may lie on the ground or beneath the surface.

Plants typical in this community include one tree species (sand pine) and a variety

of shrubs—such as Chapman's oak, sand live oak, myrtle oak, palmetto, rosemary, and rusty lyonia. These reestablish quickly after a devastating fire or bombing, so their size and the amount of bare soil depends on the length of time since the disturbance. Herbs also thrive in this disturbance, growing up quickly while the area is still open. These include several rare plants such as Florida bonamia, Calamintha, scrub buckwheat, and small Lewton's milkwort, as well as the more common beakrush and milk pea.

Rare endemic wildlife species occur here—including Florida scrub-jay, Florida mouse, Florida scrub lizard, and sand skink. Prescribed fires provide abundant young scrub habitat. This community contains wildlife common to disturbed or open-forested conditions—such as Carolina wrens, bobwhite quail, nighthawks, rufous-sided towhees, white-tailed deer, eastern cottontails, gray foxes, eastern coachwhips, scarlet snakes, racers, southern toads, and southern fence lizards. In addition to these, some less common wildlife are loggerhead shrikes, great crested flycatchers, brown thrashers, Florida pine snakes, indigo snakes, southern hognose snakes, gopher tortoises, pinewoods and barking tree frogs, fox and gray squirrels, and bobcats.

The quality of water, soil, and air is high. Patches of bare soil may cover 100 percent of a site where a live bomb has struck. Bare soil is common in the early stages of vegetation regrowth. Heritage resource sites are unlikely to occur, since scrub vegetation has always been uninviting for humans. If sites do occur, they are likely to be dispersed, not clustered. They may have been degraded by both natural forces (storms, fires, and root growth) and human activities of road construction and bombing.

The area is about 5,700 acres. Roads provide access but are closed except to authorized individuals. Depending on training schedule, these people may be either isolated or exposed to loud noises. Trails or recreational facilities do not exist. Interpretive displays and publications about the area may be found at off-site locations.

Most roads in the area have native surfacing, conform in height to the surrounding ground, and have no ditches. These roads are rough and irregular. Travel with low-clearance vehicles is difficult. A few roads have a sand clay or limerock surfacing and have ditches. These roads are of a fair standard but may not be stable during bad weather conditions. Rutting, roughness, and dust may be present most of the time.

Desired Future Condition 9.2
Forest/Urban Interface

Goal

To allow or mimic natural processes and patterns to maintain a rich diversity of native plants and animals, including the red-cockaded woodpecker. To produce poletimber and large pine sawtimber. To provide a high level of opportunities for motorized and nonmotorized recreation. To maintain cooperative relationships with other jurisdictional governments.

Desired Future Condition

An adaptive management approach is emphasized in this area. Harvest methods that have limited operational application are applied and tested here. Monitoring and close coordination with research provide feedback for adjustments in the desired future condition.

During the next two decades, portions of the longleaf pine forests are characterized by patches ranging between ¼ and 2 acres where longleaf pine regeneration is found. These areas will begin to take on an uneven-aged structure. Patches up to 80 acres are found in other areas where longleaf pine is restored. These areas will have an even-aged structure. A few patches of up to 80 acres in size are found in the slash pine and loblolly pine forest types with a two-aged appearance.

After the next two decades, the area may take on another appearance. Monitoring and research may show that operational application of regenerating longleaf pine in small patches or regenerating slash and loblolly pine under canopies does not provide the conditions envisioned. The vision for the area may change to a different mixture of patch sizes and stand structures. As the forest ages, there will be more opportunities to provide two-aged patches of slash, loblolly, and longleaf pine. Even-aged patches of longleaf pine

restoration of up to 80 acres may continue to occur.

The area contains a mosaic of plant communities, depending mostly on the moisture conditions. Drier sites are upland pine dominated by longleaf pine, with an understory of wiregrass, low oak shrubs, and a variety of herbs. Patches of medium to large hardwood, especially oak species, are scattered throughout. On wetter sites are pine flatwoods where longleaf pine is apt to be joined by slash, loblolly, and pond pine. Understory is commonly dominated by palmetto and gallberry, though wiregrass is present. Along drainages and in basins are black gum, cypress, red maple, and other hardwoods with titi and wax myrtle in the understory and along the margins. The different plant communities are not separated by sharp boundaries, but change from one type to another gradually in response to fluctuations in water level and fire history. Much of the area would have old-growth conditions at any one time. The area provides small-size patches of old growth (1-99 acres) unsuitable for timber production.

Wildlife includes species that prefer mature longleaf pine-wiregrass forests, such as the RCW. Mature flattop longleaf and slash pine with woodpecker cavities are seen through the pine forests. Other birds include brown-headed nuthatches, Bachman's sparrows, red-bellied woodpeckers, and southeastern kestrels. Mammals include bobcats, gray foxes, raccoons, and white-tailed deer. Black bears are not frequent in this area. Gopher tortoises live here and other species that share their burrows. Black racers, fence lizards, narrowmouth and oak toads, and red rat snakes also live here. Basin wetlands attract species that like water, such as a variety of salamanders and frogs, snakes (cottonmouths and mud snakes), and birds (barred owls and wood ducks).

The quality of water, soil, and air is high. Smoke from prescribed fire may be present. Fire and hazardous fuels are managed in close cooperation with State and county agencies. Wildfire is aggressively suppressed when it threatens life or property. Wetlands show no evidence of draining, vehicular activity, or manipulation. Heritage resource sites may be dispersed throughout the area rather than clustered. Natural disturbances (fires, storms, and root growth) may have degraded them. Actions are taken to prevent looting and vandalism.

Roads and trails provide access. Trail systems are coordinated with other local agencies. Trails are linked to other management areas, developed sites, and other nearby trails. Visitors may encounter other people, activities of various sorts, and residential developments on intermingled private land. Recreational use of these areas may be restricted where necessary to reduce conflicts between landowners and visitors. Trails and recreational facilities, such as fishing access sites and picnic areas, are common. These often have signs, interpretive displays, and other facilities for the comfort and safety of the user. New facilities (trailheads, parking areas, designated sites, and developed sites) are located in areas that minimized conflicts.

Most roads have native surfacing and are rough and irregular. In low areas, these roads usually have ditches and are above the surrounding ground. Many low-drainage points have low-water rock crossings. Travel with low-clearance vehicles is difficult. Other roads have a sand-clay surfacing, are higher than the surrounding ground, and have ditches. In

low areas, these may have culverts or bridges. These roads may not be stable during bad weather conditions. Rutting, roughness, and dust are present most of the time. A few higher-standard roads with limerock surfacing or pavement will be present. These are stable and smooth most of the time. Remnants of roads leading from permanent roads to small openings can be seen.

Desired Future Condition 9.3
Choctawhatchee Lands

Goal

This area is managed at a custodial level. Because the area consists of isolated, small parcels, they are considered for exchange.

The area is managed under a Memorandum of Understanding with Eglin Air Force Base.

Estimate Effects of Alternatives (Step 6)

FORPLAN, Version II, was the analytical tool used in the analysis. All alternatives for each national forest (Apalachicola, Ocala, and Osceola) in Florida were modeled separately. FORPLAN was used to analyze numerous management area prescriptions and activity schedules and their potential for achieving the objectives of each alternative.

FORPLAN is a linear programming model designed to simulate actions such as timber harvests and the resulting outputs and conditions on the forest. It is designed to find the optimum solution to a problem posed by the potentials and limitations of the land, the effect of costs, budgets, resource prices, and the desired level of yields and conditions.

FORPLAN simulates the physical characteristics of the land, activities used to manage the land, and outputs, benefits, and costs associated with activities. The primary components of the model are analysis areas, management prescriptions, yield tables, economic tables, constraints, objective functions, and outputs.

The land base is represented by analysis areas. Allocation and scheduling choices are offered to analysis areas in the form of management prescriptions. Output and cost/benefit coefficients are contained in resource yield tables and economic tables.

The program is driven by the objective function that specifies the outputs to be maximized or minimized. The model is structured to seek the greatest economic efficiency that is represented as a maximize present net worth (PNW) objective function. Constraints are conditions or restrictions that determine which course of action can or cannot be adopted. The outputs modeled were chosen because of their relationship to the issues and the reliability of the model in estimating the output. Other outputs and effects were estimated outside the model or by interpreting the results of the FORPLAN solutions.

The Core Interdisciplinary Team was directly involved with the design, operation, and interpretation of the FORPLAN model using the identified analysis areas, appropriate management practices and associated mathematical expressions.

Analysis Areas

Analysis areas were determined using six level identifiers to classify the land.

Level 1: Ranger district (for reporting purposes)

Apalachicola, Wakulla, Osceola, Lake George, and Seminole

Level 2: RCW HMAs for determining RCW constraints

Lands inside RCW HMAs and suitable RCW habitat
Lands inside RCW HMAs and not suitable for RCW; and all lands outside RCW HMAs

Direct entry acre for administrative functions

Level 3: Proximity to RCW clusters (for determining RCW constraints)

Lands within ½ mile of RCW cluster

Lands outside ½ mile of RCW cluster

Lands within ¾ mile of RCW cluster

Lands outside ¾ mile of RCW cluster

Lands unsuitable for timber production

Level 4: Drainage and soils (off-site species determination, longleaf pine restoration determination)

On-site species

Off-site slash pine

Potentially off-site slash pine

Level 5: Vegetation and Productivity (for timber yields)

Longleaf pine, high and low site productivity

Slash pine, high and low site productivity

Sand pine, high and low site productivity

Bottomland hardwood

Unsuitable longleaf/slash pine

Unsuitable sand pine

Unsuitable hardwood

All other unsuitable forest types

Level 6: Age and conditions class (in 10-year classes for timber and wildlife yields)

Age 0, needs reforestation, in regeneration

Age 1, 3-10 years old

Age 2, 11-20 years old

Age 3, 21-30 years old

Age 4, 31-40 years old

Age 5, 41-50 years old

Age 6, 51-60 years old

Age 7, 61-70 years old

Age 8, 71-80 years old

Age 9, 81-90 years old

Mature, 91+ years old

Timber Management Prescriptions

A range of timber management options was developed for the analysis areas based on species, drainage class, productivity, and proximity to RCW clusters.

The following general management options were considered.

Longleaf pine, even-aged management, rotation ages from 55 to 135, thin at ages 35, 45, and 55 or no thin, regeneration harvest by irregular shelterwood, shelterwood, or clearcut. On the Ocala NF the final thin was at age 65.

Longleaf pine, uneven-aged management, using group selection regeneration harvest. Conversion to uneven-aged management was allowed between the ages of 55 to 165.

Slash pine, even-aged management, rotation ages from 55 to 135, thin at ages 25, 35, and 45, or no thin, regeneration harvest by irregular seed tree, seed tree, or clearcut.

Slash pine, convert to longleaf pine, rotation ages from 35 to 85, thin at age 25 or no thin, slash harvest by clearcut, and resulting longleaf pine managed under longleaf options.

Slash pine, uneven-aged management, using group selection regeneration harvest. Conversion to uneven-aged management was allowed between the ages of 55 to 165.

Sand pine, even-aged management, rotation ages from 25 to 75, no thin, and final harvest by clearcut.

Bottomland hardwood, even-aged management, rotation ages from 65 to 105, thin or no thin, and final harvest by clearcut.

The range of options were developed to encompass the alternatives and to provide a reasonable number of economic options for scheduling harvests in the model.

Within each species group, variations in site productivity, rotation ages, silvicultural systems, thinning regimes, restoration rates, and final harvest methods, resulted in the creation of 60 individual prescriptions. For example, a sample of prescriptions available for longleaf pine would be:

Longleaf pine, high site productivity, even-aged, no thins, rotation age 115, and final harvest by irregular shelterwood.

Longleaf pine, high site productivity, even-aged, thins, rotation age 115, and final harvest by irregular shelterwood.
Longleaf pine, high site productivity, even-aged, no thins, rotation age 115, and final harvest by clearcut.

Longleaf pine, high site productivity, even-aged, thins, rotation age 85, and final harvest by irregular shelterwood.

Yield Tables

Yield estimates for each prescription were modeled for outputs directly related to timber management activities such as timber products, wildlife indices, road reconstruction, water yield, and sediment yield. Yields for outputs such as recreation, infrastructure construction and maintenance, and other areas not directly related to timber management were directly entered into the model.

Timber Yields

Timber yields were developed using three growth and yield programs. The ``SRGYS, The Southern Region Growth and Yield System," developed by David Belcher, was used to develop the basic thinning and harvest regimes for longleaf and slash pine. ``SANDPINE, A Growth and Yield System," developed by David Belcher and Ken Outcalt, was used to model the sand pine on the Ocala NF. A Lotus® spreadsheet was developed to model some of the newer cutting methods employed by this plan such as irregular shelterwood and uneven-aged group selection.

The SRGYS model was used to develop the basic thinning and harvest regimes. The program was run for several different scenarios or prescriptions. The final scenarios included thinnings at ages 25, 35, and 45 for slash pine and 35, 45, and 55 for longleaf pine. These scenarios also included different harvest rotations ranging from 35 to 165. On the Ocala NF, the thinning regime selected for longleaf included thins at ages 35, 45, and 65.

The SRGYS program has several growth and yield models designed to fit the species of trees in the Southern Region. However, most of the growth and yield formulas were developed when rotations for pine were much shorter (40-80 years) than those modeled in this revision. Therefore, timber growth and yield beyond these rotation ages had to be extrapolated. Most outputs of the SRGYS program were higher than actual timber sale data, so outputs had to be reduced. It was determined that the growth and yield programs predicted the perfect scenario and did not account for holes in the stands and growth reduction caused by crown scorch from prescribed burns or wildfires. Several clearcut scenarios were run for the different species and site indexes to calibrate the growth formulas in the program to actual data gathered on timber sales.

A Lotus® spreadsheet was developed to calibrate the results of the SRGYS program to the historical timber sale data, to extrapolate growth and yield beyond the limits of the SRGYS program, and to combine understories and overstories developed in the SRGYS runs to model irregular shelterwood or seed trees. This spreadsheet was also used to model uneven-aged group selection that will be discussed later.

The sand pine program was used to model growth and yield of sand pine on the Ocala NF. Differences in the yield tables were created by entering different site indexes and beginning trees per acre. The harvest age ranged from 35 to 75 years old.

Considering the 60 different timber prescriptions, about 250 even-aged yield tables were constructed. Each timber yield table includes average diameter at breast height (DBH) per acre, trees per acre greater than 10 inches, basal area per acre greater than 5 inches, total volume per acre of sawtimber and round- wood are reported in million cubic feet. The yield tables were displayed this way to provide information in a form that was required for RCW-forage analysis.

Modeling irregular shelterwood in longleaf and slash pine proved a challenge. Little research or modeling efforts could be located that addressed the effects of residual overstory on the survival and growth of seedlings. Consultation with Dr. William Boyer and two research papers (Boyer, 1993 and Feduccia, 1978) were used to construct a spreadsheet that combined the overstory and understory stands while reducing for the effect of residual pine being kept in the overstory.

Dr. Boyer's research concluded that even a few trees left remaining in the overstory has a significant effect on the growth and yield of longleaf seedlings beneath them. For example, a stand with 9 sq. ft. of basal area of overstory will experience 59 percent less diameter growth than a stand with no overstory. Feduccia's paper indicated that leaving 20 sq. ft. of basal area in the overstory will cause a 31-percent reduction in timber volume in slash pine when compared to an open grown stand. The mortality rate used for the overstory stand was based on a paper

by Dr. Boyer (1979). He concluded that 2 trees per acre were lost every 10 years. For those management intensity levels that allowed an overstory removal, it was assumed that seed trees could be removed the decade following the initial seed cut.

The uneven-aged yield tables were also a challenge because very little research could be found, especially on longleaf and slash pine species. Uneven-aged yield tables were modeled using the diameter distributions developed for the even-aged yield tables as the starting point for conversion to uneven-aged management. These diameter distributions were entered into a growth simulator that was developed in the form of a spreadsheet. The growth simulator provided for growth, mortality, ingrowth, average opening size, the effect of the forest wall on seedlings. It also provided a target cut curve to match the parameters selected for Dmax and q. The growth simulator uses the BDQ method of calculating cut and leave trees.

A total of 104 yield tables were developed for the 2 pine species, 2 productivity levels, 2 management strategies, and 13 different stand ages at the time of conversion to uneven-aged management. Each of the yield tables was grown for 20 periods with 10 or 20 year cutting cycles. After testing different scenarios, it was determined that using a Dmax of 22 inches, a q factor of 1.2, an average opening size of 1 acre, and a 20-year cutting cycle would provide the best results.

A Dmax of 22 inches was selected because it would keep at least 6 trees per acre greater than 18 inches for future RCW-nesting habitat. A q factor of 1.2 for 1-inch diameter classes was selected based on recommendations from Dr. Farrar and Dr. Boyer. The average size opening of 1 acre was selected as the midpoint in the range of openings sizes from ¼ acre to 2 acres.

A forest wall shading effect on regeneration was incorporated based on one of Dr. Boyer's paper (1963).

Both the even-aged and uneven-aged yield tables were then formatted to meet the specifications of FORPLAN and used to generate outputs from the models.

Between the Draft EIS (DEIS) and FEIS, some changes were made in the yield tables. The sand pine yield tables were changed by comparing data from recent sales. Yields for some age classes were increased based on these recent sales. Sand pine yields increased about 30 percent. The yields for group selection harvests were reduced based on recent sales. Some pine sawtimber yield tables were reduced by about 50 percent.

Wildlife Yields

A group of Forest Service biologists selected species to model from a proposed list of indicator species. Coefficients for habitat suitability were developed using published models as a guide or drafted by the group using personal experience and knowledge. These coefficients apply to habitat conditions that can be modeled in FORPLAN. These conditions are: forest type, stand age, and if the stand is thinned or not. Several limitations apply to these coefficients. Past models and experience relate to even-aged management. There is little or no information and experience relating to wildlife response to uneven-aged management. Spatial considerations cannot be directly accounted for in FORPLAN. Ground cover data is not available to input into the model. Therefore, only a crude estimate of

habitat suitability can be determined using these models.

Adjustments were made in the indices between DEIS and FEIS. Some acres not suited for timber management were not given coefficients in the DEIS, which was corrected in the FEIS model. The most significant change in the scrub-jay coefficients between the DEIS and FEIS.

Species modeled were bobwhite quail, fox squirrel, gopher tortoise, gray squirrel, pileated woodpecker, scrub-jay, white-tailed deer, and wild turkey.

Wildlife and fish user-day (WFUD) coefficients were applied to the species index for big-game use days (deer and turkey) and small game use days (gray squirrel and quail) based on hunter use data from hunter survey data complied by the Florida Game and Fresh Water Fish Commission.

Soil and Water Yields

Sediment is produced during logging due to road use, skidding, decking, and site preparation. Erosion rates and coefficients for sediment production for the last planning cycle were determined for clearcut-ting, thinning, shelterwood, and seed-tree harvesting on the national forests in Florida. These coefficients are valid for this planning cycle and were used in the model. Coefficients for sediment production with group selection harvests were determined for this planning cycle by estimating the percentage of area entered for logging and the disturbance expected under each new management prescription. This was compared with past management practices and the associated coefficients for sediment production. Coefficients were expressed as pounds of sediment per acre for each acre harvested by treatment type in a 10-year period.

Between the DEIS and FEIS the coefficients were reviewed and changes were made.

Increased water yield results when evapotranspiration is reduced by harvesting or otherwise reducing forest vegetation. Water runoff coefficients from the last planning cycle were used for clearcut harvesting. Coefficients for thinning, shelterwood, seed tree, and group selection were determined by multiplying runoff coefficients for clearcutting by the percentage of basal area removed by each of the other harvest methods. Coefficients were expressed as acre-feet of water for each acre harvested by treatment type in a 10-year period.

Economic Tables

Costs for implementing each alternative were estimated by each resource area, except timber management. Estimated budgets were directly entered into the FORPLAN model. Each resource area staff estimated the budget required to implement fully the alternatives for each decade in the planning horizon. These estimates were validated for the ``no action" or current plan alternative by comparing costs from the past 5 years.

Costs for the timber management program were applied to appropriate units such acres treated or volume harvested. Costs for the timber management program were estimated based on 1995 Timber Sale Program Information Reporting System (TSPIRS) and the past 5-year average costs for items not reflected in TSPIRS.

Revenues for timber were estimated based on 1995 TSPIRS. Dollar values for

WFUDs and recreation visitor-days (RVDs) were calculated based on ``Resource Pricing and Valuation Procedures for the Recommended 1990 RPA Program." Table B.1 shows the unit costs and revenues used in FORPLAN.

Constraints

Periodic fluctuations in the timber allowable sale quantity were controlled by constraints. According to the regulations for nondeclining yield, the ASQ for any future decade shall be equal or greater than the ASQ for the preceding decade, providing that the planned quantity is not greater than the long-term sustained-yield capacity (LTSYC) of the alternative. LTSYC is defined as ``the highest uniform wood yield from lands being managed for timber production that may be sustained under a specified management intensity consistent with multiple-use objectives" (NFMA Reg. 219.3). LTSYC is potential average growth. Each prescription for an analysis area could contain a different management intensity for timber and a LTSYC coefficient. The regulation requirement is met by combining the nondeclining yield constraint with a requirement that the ASQ be at or below the LTSYC in the last planning period for each alternative. Since ASQ is kept below LTSYC in the last planning period, it must remain below it in all periods.

Table B.1

Unit Costs and Revenues

Comparison of FORPLAN Unit Costs			
Description	**Unit**	**Yellow Pine**	**Sand Pine**
Sale Preparation Even-Aged	$/MCF	$310.70	$110.50
Sale Preparation Uneven-Aged	$/MCF	$388.37	N/A
Harvest Administration Even-Aged	$/MCF	$136.35	$35.65
Harvest Administration Uneven-Aged	$/MCF	$170.43	N/A
Site Preparation Artificial Regeneration	$/Acre	$111.31	N/A
Site Preparation Natural Regeneration	$/Acre	$92.00	N/A
Site Preparation Uneven-Aged	$/Acre	$115.00	N/A
Planting Pine	$/Acre	$193.02	N/A
Seeding Sand Pine	$/Acre	N/A	$60.88
Pine Release	$/Acre	$92.00	N/A
Pine Release Uneven-Aged	$/Acre	$75.00	N/A
Brownspot Control	$/Acre	$17.60	N/A
Road Reconstruction - Apalachicola NF	$/Mile	$13,009.00	$13,009.00
Road Reconstruction - Ocala NF	$/Mile	$10,254.00	$10,254.00
Road Reconstruction - Osceola NF	$/Mile	$13,368.00	$13,368.00

Revenues Used in FORPLAN		
Description	**Unit**	**Revenue**
Yellow Pine Roundwood	$/MCF	$555.40
Yellow Pine Sawtimber	$/MCF	$1,601.11
Sand Pine Roundwood	$/MCF	$452.50
Hardwood Roundwood	$/MCF	$401.30
Hardwood Sawtimber	$/MCF	$1,134.40
Camp/Swim/Picnic	RVD	$9.36
Mechanical Travel/View Scenery	RVD	$7.13
Hike/Horse/Water Recreation	RVD	$3.15

Resort/Cabin/Organized Recreation	RVD	$16.18
Fishing	RVD	$60.49
Nonconsumptive Use Fish/Wildlife	WFUD	$36.23
Other Recreation	RVD	$56.68
Small Game Hunting	WFUD	$34.00
Big Game Hunting	WFUD	$33.00
Range	$/AUM	$4.92

FORPLAN - Forest Planning MCF - thousand cubic feet N/A - not applicable
RVD - recreation visitor-day WFUD - wildlife and fish user-day AUM - animal unit month

NFMA regulations require that each sale schedule shall provide for a forest structure that will enable perpetual timber harvest which meets the principal of sustained yield and multiple-use objectives of the alternative (NFMA Reg. 219.13D). This requirement is met by applying a perpetual harvest constraint to the model. This constraint ensures that the forest contains as much timber inventory volume in the last period to allow for the perpetual harvest at the levels identified in the alternatives. No more than one-third of forested acres was allowed within the 0-20 age class. This is designed to protect wildlife that requires mature forests (FSH 2609.28R8, *Wildlife Habitat Management Handbook*).

Modeling Criteria by Alternative

Record of Decision for the Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region requires several standards for timber management. These constraints were applied in different ways depending on alternative and forest HMA.

The following criteria applies to all forests in modeling RCW guidelines. There are some differences between forests based on management intensity level (MIL).

Alternative A

Within ¼ mile RCW clusters:

No regeneration harvests except for restoration.

Within ¾ mile of RCW clusters:

No regeneration in the oldest one-third until these stands approach rotation age.

Rotation age is 120 years for all pine.

Regeneration harvest using shelterwood with no removal and clearcut for restoration.

Thinning is permitted.

Provide 6,350 pine stems greater than 10 inches and 8,490 sq. ft. of pine basal area per RCW cluster for foraging.

Maximum 8.5 percent pine in age class 0-10 and 25 percent pine in age class 0-30.

Outside ¾ mile of RCW clusters and within tentative HMA:

Harvest methods restricted to thinning, irregular shelterwood and clearcutting for restoration.

Rotation ages range from 55 to 85.

Common to Alternatives B, C, D, and E

Within ¼ mile RCW clusters:

No regeneration or restoration harvest on the Wakulla Ranger District (RD) and Osceola NF (MIL 3) or the Ocala NF (MIL 4).

Within Habitat Management Area:

No regeneration in the oldest one-third until these stands are within 10-20 years of rotation age.

Rotation age is 120 years for longleaf pine and 100 years for slash pine when using even-aged harvest methods.

Regeneration harvest using group selection harvest is permitted. Also permitted is irregular shelterwood, leaving 6 trees per acre in longleaf pine. In slash pine, 6 trees per acre will be left on the Apalachicola RD and 25 sq. ft. of basal area per acre will be left on the Wakulla RD and Osceola NF (MIL 3), 40 sq. ft. of basal area per acre will be left on the Ocala NF (MIL 4). Clearcutting is permitted for forest-type restoration. Thinning is permitted.

Maximum 8.5 percent longleaf pine in age class 0-10 and 25 percent longleaf pine in age class 0-30. Maximum 10 percent slash pine in age class 0-10 and 30 percent slash pine in age class 0-30.

For periods 1 and 2 with restoration only cutting, maximum of 15 percent of all pine in 0-10 age class and 40 percent in 0-30 age class.

Within HMA and 1½ miles from active RCW clusters:

For periods 1 and 2, with restoration harvest, provide 3,175 stems and 4,245 sq. ft. basal area per cluster.

Common to Alternatives A, B, and D

Within ½ mile of RCW clusters:

Provide 6,350 pine stems greater than 10 inches and 8,490 sq. ft. of pine basal area per RCW cluster for foraging.

Common to Alternatives C and E

Within ½ mile of RCW clusters on all districts, except the Apalachicola RD:

Provide 6,350 pine stems more than 10 inches and 8,490 sq. ft. of pine basal area per RCW cluster for foraging on all other districts.

Within ½ mile of RCW clusters on the Apalachicola RD only:

Provide 4,100 pine stems greater than 10 inches and 5,500 sq. ft. of pine basal area per RCW cluster for foraging on the Apalachicola RD. This reflects reduced-foraging requirement.

Within HMA in on-site slash pine:

1,000 acres irregular shelterwood allowed on the Apalachicola RD.

500 acres irregular shelterwood allowed on the Wakulla RD.

300 acres irregular shelterwood allowed on the Osceola NF.

Following is a discussion of criteria applied to the alternatives in addition to RCW constraints.

Alternative A

Hardwood

Regeneration method: Clearcut.

Constraints: Apalachicola NF 1,000 acres maximum per period, Ocala NF 500 acres maximum per period, and Osceola NF 580 acres maximum per period. This reflects the 1986 Forest Plan outputs.

Off-Site Slash Pine

Regeneration method: Clearcut.

Constraints: Restoration must be complete by fourth period. This assures

that restoration is not delayed for economic reasons in the model.

Longleaf and Slash Pine

Regeneration method: Shelterwood and seed tree.

Constraints: No more than one-third of the pine acres outside the ¾-mile circle is allowed in the 0-20 year age class. This reflects a 60-year rotation outside the ¾-mile circles.

Sand Pine, Ocala NF Only

Regeneration method: Clearcut.

Constraints: No maximum cut was set for sand pine, the model was free to run.

Alternative B

Hardwood

Unsuitable for timber production.

Off-site Slash Pine

Regeneration method: Clearcut.

Constraints: Restoration must be complete by fourth period. This assures that restoration is not delayed for economic reasons in the model.

Longleaf and Slash Pine

Regeneration method: Modified group selection.

Constraints: The maximum acres of uneven-aged harvest was Apalachicola NF 28,000 acres in period 1 and 40,000 acres in period 2, Osceola NF 2,400 acres in periods 1 and 2, Ocala NF 1,000 acres minimum and no maximum in periods 1 and 2. These acres reflect the amount that would be operationally possible on the forests to achieve the DFC. Otherwise, the model would harvest the maximum available.

Sand Pine, Ocala NF Only

Regeneration method: Clearcut.

Constraints: No more than one-fifth of the sand pine acres were allowed in the 0-10 age class and at least 2,700 acres more than 50 years old and less than 80 years in the first period, then going to 9,000 acres for periods 2-20 were retained. This would reflect a 50-year rotation and retention of 5 percent of the sand pine in older age classes.

Alternative C

Hardwood

Regeneration method: Clearcut.

Constraints: Apalachicola NF 8,000 acres maximum per period, Osceola NF 4,610 acres maximum per period, Ocala NF 2,811 acres maximum per period. This reflects a standard to have no more than 33 percent of the suitable hardwood in the 0-10 year age class.

Off-site Slash Pine

Regeneration method: Clearcut.

Constraints: Restoration must be complete by fourth period. This assures that restoration is not delayed for economic reasons in the model.

Longleaf and Slash Pine

Regeneration method: Irregular shelterwood and irregular seed tree.

Constraints: Even-aged harvests limited in periods 1 and 2 to longleaf pine restoration and 1,000 acres irregular shelterwood on the Apalachicola RD, 500 acres irregular shelterwood on the Wakulla RD, and 300 acres irregular shelterwood on the Osceola NF. This reflects the age class constraints of the RCW guidelines and is the maximum acreage allowed in the 0-10 year age class at the end of the first planning period.

Sand Pine, Ocala NF Only

Regeneration method: Clearcut.

Constraints: No maximum cut was set for sand pine, the model was free to run. At least 2,700 acres more than 50 years old and less than 80 years in the first period, then going to 9,000 acres for periods 2-20 were retained. No maximum cut reflected the commodity emphasis of the alternative and the acreage constraints reflected maintaining 5 percent of the sand pine in older stands.

Alternative D

Hardwood

Unsuitable for timber production.

Off-Site Slash Pine

Regeneration method: Clearcut.

Constraints: Restoration must be complete by fourth period.

Longleaf and Slash Pine

Regeneration method: Irregular shelterwood and irregular seed tree—Wakulla RD, Osceola NF, and Ocala NF; modified group selection—Apalachicola RD and Osceola NF.

Constraints: No additional even-aged constraints. The maximum uneven-aged harvest allowed on the Apalachicola NF was 14,000 acres in period 1 and 28,000 acres in period 2. Osceola NF had a minimum 1,000 acres and a maximum 3,000 acres of uneven-aged harvest allowed in periods 1 and 2. These acres reflect the amount that would be operationally possible on the forests to achieve the DFC. Otherwise, the model would harvest the maximum available.

Sand Pine, Ocala NF Only

Regeneration method: Clearcut

Constraints: No maximum cut was set for sand pine, the model was free to run. At least 840 acres more than 50 years old and less than 80 years were retained in periods 2-20. This reflected keeping 5 percent of the sand pine in one management area in older stands.

Alternative E

Hardwood

Unsuitable for timber production.

Off-site Slash Pine

Regeneration method: Clearcut.

Constraints: Restoration must be complete by fourth period. This assures that restoration is not delayed for economic reasons in the model.

Longleaf and Slash Pine

Regeneration method: Modified group selection, irregular shelterwood, and irregular seed tree.

Constraints: The maximum acres of uneven-aged harvest on the Apalachicola NF was 28,000 acres in period 1 and 40,000 acres in period 2. The minimum acres of uneven-aged harvests in combination with slash pine removal on the Osceola NF was 10,000 acres in periods 1 and 2. The maximum uneven- aged harvest on the Ocala NF was 2,500 acres in periods 1 and 2. This reflects the amount operationally possible on the forests to achieve the DFC. Even-aged harvests limited in periods 1 and 2 to longleaf pine restoration and 1,000 acres irregular shelterwood on the Apalachicola RD, 500 acres irregular shelterwood on the Wakulla RD, and 300 acres irregular shelterwood on the Osceola NF. This reflects the age class constraints of the RCW guidelines and is the maximum acreage allowed in the 0-10 year age class at the end of the first planning period

Sand Pine, Ocala NF Only

Regeneration method: Clearcut.

Constraints: No more than 41,000 acres of the sand pine were allowed in the 0-10 age class and at least 2,700 acres more than 50 years old and less than 80 years in the first period, then going to 9,000 acres for periods 2-20 were retained. This would reflect a 50-year rotation and retention of 5 percent of the sand pine in older age classes.

Sensitivity Analysis

During construction of the alternative models, several trial runs were made that constituted a form of sensitivity analysis. Alternatives were modeled with no constraints or different constraints than used in the final runs. Prescriptions were turned off or on, and varying ranges of activities were permitted. Costs were varied and coefficients for some outputs such as WFUDs were fine-tuned. Each run was saved and used for sensitivity analysis during final model development. Fifteen trial runs on the Osceola model resulted in a range for LTSYC from 998 to 3,111 MCF/ year and a PNW range from $42,000 to $57,000 for the first period. Thirteen trial runs for the Ocala model resulted in a range for LTSYC from 4,984 to 6,381 MCF/year and a PNW range from $176,000 to $57,000 for the first period. Twelve trial runs for the Apalachicola model resulted in a range for LTSYC from 3,000 to 9,937 MCF/year and a PNW range from $56,000 to $73,000 for the first period. Additional information on the sensitivity analysis is found in the process records.

Timber Resource Suitability

36 CFR 219.14 directs that during the forest planning process, lands that are unsuitable for timber production be identified. Lands identified within the following categories are considered in stage 1 analysis as unsuitable for timber production:

1. Nonforestland.

2. Forestland withdrawn from production by an Act of Congress, the Secretary of Agriculture, or the Chief of the Forest Service.

3. Forestland not capable of producing crops of industrial wood.

4. Forestland physically unsuitable where technology is not available to ensure timber production without

irreversible resource damage to soils productivity or watershed conditions or without reasonable assurance that land can be adequately restocked within 5 years of harvest.

5. Forestland where inadequate information is available to project responses to timber management practices.

The acres on three of the national forests in Florida within these categories are displayed in Table B.2.

In addition to lands that meet the above 5 categories, additional areas may be identified as not appropriate for timber production to meet objectives of an alternative if (1) land is proposed for uses which preclude timber production, (2) other objectives limit timber production such that minimum management requirements in CFR 219.27 cannot be met, or (3) land are not cost-efficient in meeting forest objectives over the planning horizon.

Table B.2

Acres Tentatively Suitable for Timber Production

Category	Acres
Apalachicola National Forest	
Total Acres	575,489
Nonforestland	-6,657
Withdrawn	-33,662
Not Capable	-0
Physically Unsuitable	-10,232
Inadequate Information	-8,665
Tentatively Suitable Acres	**516,273**
Ocala National Forest	
Total Acres	383,362
Nonforestland	-29,603
Withdrawn	-28,197
Not Capable	-0
Physically Unsuitable	-488
Inadequate Information	-5,190
Tentatively Suitable Acres	**319,884**
Osceola National Forest	
Total Acres	194,732
Nonforestland	-1,372
Withdrawn	-14,041
Not Capable	-0
Physically Unsuitable	-3,519
Inadequate Information	-15,000
Tentatively Suitable Acres	**160,800**

NOTE: Total tentatively suitable acres for these forests = 996,957.

These lands are subtracted from the tentatively suitable acres to provide the total suitable acres for each alternative. The acres of land not appropriate for timber production for each forest by alternative are shown in Table B.3.

Table B.3

Land Classified as Suitable for Timber Production by Alternative

	Alternatives				
	A	B	C	D	E
Apalachicola National Forest					
Tentatively Suitable Acres	516,273	516,273	516,273	516,273	516,273
T&E Species Sites	-16,297	-16,489	-18,934	-16,106	-18,261
Recreation Sites	-1,836	-1,605	-1,761	-1,700	-1,560
Nontimber Management Areas	0	-27,358	0	-55,709	-14,305
Special Interest Areas	-3,533	-1,987	-3,760	-24,715	-4,824
Wilderness Study Areas	-5,625	-5,625	0	-5,625	-5,625
Wild & Scenic River Corridors	-3,498	-9,151	-3,498	-9,147	-10,435
Candidate RNAs	0	-20,948	0	0	0
Wildlife Mast Areas	-2,833	0	0	0	0
Titi Retention Areas	-113,376	-109,830	-115,273	-88,762	-110,986
Streamside Management Zones	-1,642	-1,248	-1,409	-1,243	-1,349
Not Appropriate Hardwood	0	-77,735	0	-73,333	-80,080
Minimum Level Management	-101,049				
		0	0	0	0
TOTAL	**266,584**	**244,297**	**371,638**	**239,933**	**268,848**

T&E - threatened and endangered RNAs - research natural areas

Table B.3 (cont.)

	Alternatives				
	A	B	C	D	E
Ocala National Forest					
Tentatively Suitable Acres	319,884	319,884	319,884	319,884	319,884
T&E Species Sites	-5,130	-2,729	-5,181	-2,094	-4,239
Recreation Sites	-1,827	-1,736	-1,902	-1,735	-1,863
Nontimber Management Areas	-27	-16,848	-2,938	-42,723	-5,551
Special Interest Areas	-8,832	-6,721	-8,833	-7,521	-3,257
Wild & Scenic River Corridors	-0	-1,911	0	-1,823	-1,822
Candidate RNAs	0	-17,992	0	0	0
Wildlife Mast Areas	-10,088	0	0	0	0
Streamside Management Zones	-923	-1,494	-1,556	-1,377	-1,611
Scrub-Jay Management	0	0	0	-7,581	-1,875
Not Appropriate Hardwood	0	-8,641	0	-24,866	-28,066
Minimum Level Management	-15,019				
		0	0	0	0
TOTAL	**278,038**	**261,812**	**299,474**	**230,164**	**271,600**
Osceola National Forest					
Tentatively Suitable Acres	160,800	160,800	160,800	160,800	160,800
T&E Species Sites	-4,519	-4,535	-4,535	-4,389	-4,495
Recreation Sites	-102	-102	-102	-3,192	-279
Experimental Forest	-2,802	-2,802	-2,802	-2,802	-2,802
Nontimber Management Areas	-2,071	-15,851	-238	-21,081	-19,339
Special Interest Areas	-34	-3,338	-316	-973	-2,049
Wilderness Study Areas	-4,400	0	0	-4,400	-4,396
Candidate RNAs	0	-284	0	0	0
Wildlife Mast Areas	-22	0	0	0	0
Streamside Management Zones	-478	-369	-478	-358	-368
Not Appropriate Hardwood	0	-33,904	0	-32,694	-34,183
Minimum Level Management	-37,951			0	
		0	0		0
TOTAL	**108,421**	**99,615**	**152,329**	**90,911**	**92,889**
GRAND TOTAL	**653,043**	**605,724**	**823,441**	**561,008**	**633,337**

T&E - threatened and endangered RNAs - research natural areas

Stage II Analysis

This stage does not identify any lands as unsuitable for timber production, it merely assesses the costs and benefits associated with a range of management intensities for timber production. For this stage, the forest is stratified into categories of land with similar management costs and returns. This analysis identifies the management intensity for timber production for each category which results in the highest present net worth.

For this analysis a FORPLAN model was run for each forest with all prescriptions available. For each model all constraints were turned off except the RCW-forage constraints, long-term sustained-yield, and perpetual flow on timber. The models were then run to maximize present net worth. This analysis will allow the comparison of the different prescriptions used for each analysis area. Because the reports returned from these runs would require many pages, a summary of the highest PNW per acre by species is presented in Table B.4.

Table B.4

Prescriptions with Highest Present Net Worth

Species	Prescription	Present Net Worth
Apalachicola National Forest		
Longleaf Pine	Longleaf irregular shelterwood to longleaf, no thin, 115 to 135 year rotation	1,709.20
Longleaf Pine	Longleaf convert to uneven-aged at age 95, thin	777.85
Off-site Slash Pine	Off-site slash clearcut to longleaf, irregular shelterwood to longleaf, thin, 95 year rotation	16.75
Off-site Slash Pine	Off-site slash clearcut to longleaf, convert to uneven-aged at 65, thin	19.27
Potential Off-site Slash Pine	Potential off-site slash clearcut to longleaf, shelterwood to longleaf, no thin, 55-85 rotation	1,344.60
Potential Off-site Slash Pine	Slash clearcut to longleaf, and then converted to uneven-aged at 75 , no thins	1,566.40
On-site Slash Pine	Slash pine irregular shelterwood to slash pine, no thin, 95 to 115 year rotation	1,475.70
On-site Slash Pine	Slash pine converted to uneven-aged at age 55, thin	708.68
Bottomland Hardwoods	Bottomland hardwoods clearcut to bottomland hardwoods, no thin	1,208.80
Ocala National Forest		
Species	**Prescription**	**Present Net Worth**
Sand Pine	Sand pine clearcut to sand pine, low-intensity site prep	548.35
Longleaf Pine	Longleaf shelterwood to longleaf, no thin, 55 to 85 year rotation	3,161.20
Longleaf Pine	Longleaf converted to uneven-aged at age 65, thin	900.32
Off-site Slash Pine	Off-site slash clearcut to longleaf, shelterwood to longleaf, no thin, 55-85 year rotation	156.87
Off-site Slash Pine	Off-site slash clearcut to longleaf, convert to uneven-aged at 65 years old, no thin	416.00
Potential Off-site Slash Pine	Potential off-site slash to longleaf, shelterwood to longleaf, no thin, 55-85 year rotation	1,344.60
Potential Off-site Slash Pine	Potential off-site slash clearcut to longleaf, convert longleaf to uneven-aged at age 75, no thin	1,896.20
On-site Slash Pine	Slash pine shelterwood to slash pine, thin, 55 to 85 year rotation	1,254.40
On-site Slash Pine	Slash converted to uneven-aged at 55, thin	808.55
Bottomland Hardwoods	Bottomland hardwoods clearcut to bottomland hardwoods, no thin	1,686.90
Osceola National Forest		
Species	**Prescription**	**Present Net Worth**
Longleaf Pine	Longleaf irregular shelterwood to longleaf, no thin, 115 to 135 year rotation	1,819.80
Longleaf Pine	Longleaf converted to uneven-aged at age 85, thin	880.89
Potential Off-site Slash Pine	Slash pine clearcut to longleaf, irregular shelterwood, no thin, 95 year rotation	1,632.40
Potential Off-site Slash Pine	Potential off-site slash clearcut to longleaf, convert to uneven-aged at 75 years old, no thin	1,691.10
On-site Slash Pine	Slash pine irregular shelterwood to slash pine, no thin, 95 to 115 year rotation	1,553.20
On-site Slash Pine	Slash pine converted to uneven-aged at age 55, thin	764.95
Bottomland Hardwoods	Bottomland hardwoods clearcut to bottomland hardwoods, no thin	1,327.10

All of the analysis areas and prescriptions offer a positive PNW. However, there are some prescriptions where the PNW is low. These are usually stands that are young and have a high establishment cost with a harvest 15-20 decades in the future.

Benchmarks

Benchmarks approximate maximum economic and biological resource production opportunities, are helpful in evaluating the compatibilities and conflicts between resource objectives, and help define the range within which integrated alternatives can be developed. The following benchmarks were developed.

Current Level Benchmark

This benchmark provides for management using the current plan, as amended to show the most likely level of goods and services expected to be provided if current management continues. This benchmark is the same as Alternative A and meets all requirements specified in the regulations (36 CFR 219).

Maximum Timber Benchmark

This benchmark was used to define the maximum timber output possible subject to the following minimum management constraints.

1. The objective function maximizes all timber product production in MCF for periods 1 through 20.

2. RCW management requirements apply, except for reduced-foraging requirements on the Apalachicola NF.

3. Maximum of 33 percent in age classes 0-20 for soil, water, and wildlife protection.

4. Nondeclining yield applied.
5. Includes all tentatively suitable land except RCW clusters, developed recreation sites, and special interest areas.

Maximum Present Net Worth with Market Values Only Benchmark

The purpose of this benchmark was to estimate the mix of resource uses and determine a schedule of outputs and costs that maximizes present net worth of those outputs that have an established market price. These outputs include market prices for timber, range, minerals, developed recreation, and land-use fees. The following specifications applied.

1. The objective function maximizes present net worth with market values only.
2. RCW management requirements apply, except for reduced-foraging requirements on the Apalachicola NF.

3. Maximum of 33 percent in age classes 0-20 for soil, water, and wildlife protection.

4. Nondeclining yield applied.

5. Includes all tentatively suitable land except RCW clusters, developed recreation sites, and special interest areas.

Maximum Present Net Worth with Assigned Values Benchmark

The purpose of establishing this benchmark was to estimate the mix of resource uses and schedule of outputs and costs that would maximize present net worth of outputs assigned a monetary value. The following specifications were applied.

1. The objective function maximizes present net worth with market and assigned values.
2. RCW management requirements apply, except for reduced-foraging requirements on the Apalachicola NF.
3. Maximum of 33 percent in age classes 0-20 for soil, water, and wildlife protection.
4. Nondeclining yield applied.
5. Includes all tentatively suitable land except RCW clusters, developed recreation sites, and special interest areas.

Minimum Level Management Benchmark

This benchmark represents the minimum level of management needed to maintain and protect the unit as part of the National Forest System. The following specifications were applied.

1. The objective function maximizes present net worth with market and assigned values.
2. Minimum level timber management prescription applied to all acres except for a minimum amount of thinning and regeneration in HMAs to sustain habitat for RCW and a minimum amount of harvest in sand pine to sustain habitat for scrub-jay.

Maximum Wilderness Benchmark

Alternative D was developed to evaluate the impacts of maximizing wilderness allocations. All wilderness study areas were allocated as wilderness. Roadless areas were either allocated as wilderness or allocated for semiprimitive recreation opportunities.

Table B.5 shows selected outputs for the benchmark runs for the first three 10-year periods. All PNW figures are cumulative by period.

Table B.5

Benchmarks

	Period 1				
	Maximum PNW Market Only	**Maximum PNW Market & Nonmarket**	**Maximum Timber**	**Maximum WFUD**	**Minimum Level**
Apalachicola NF					
Timber Volume (MCF)	43,558	43,470	47,741	3,201	4,000
LTSYC (MCF/Year)	7,772	8,022	10,725	812	642
WFUD	474	476	470	516	512
Revenue (M$)	48,218	144,609	145,442	53,074	56,801
Costs (M$)	58,781	58,752	63,824	37,566	16,996
Net (M$)	-10,561	85,857	81,618	15,508	39,805
PNW (M$)	-8,681	70,568	67,084	12,746	32,717
Ocala NF					
Timber Volume (MCF)	79,978	79,294	59,366	15,929	20,001
LTSYC (MCF/Year)	9,271	8,788	10,501	1,640	2,398
WFUD	1,876	1,970	1,916	1,945	1,969
Revenue (M$)	61,315	393,805	376,651	345,334	217,775
Costs (M$)	96,209	94,406	88,159	65,692	36,277
Net (M$)	-34,893	299,398	288,492	279,642	181,498
PNW (M$)	-28,679	246,084	237,120	229,845	149,178

PNW - present net worth MCF - thousand cubic feet LTSYC - long-term sustained-yield capacity
WFUD - wildlife and fish user-day M$ - thousands of dollars

Table B.5 (cont.)

Period 1 (cont.)	Maximum PNW Market Only	Maximum PNW Market & Nonmarket	Maximum Timber	Maximum WFUD	Minimum Level
Osceola NF					
Timber Volume (MCF)	13,888	13,888	13,734	2,106	4,251
LTSYC (MCF/Year)	3,385	3,406	3,965	869	642
WFUD	360	364	367	367	364
Revenue (M$)	15,980	103,032	102,853	88,372	53,041
Costs (M$)	41,801	41,801	42,476	35,662	18,574
Net (M$)	-25,819	61,232	60,377	52,711	34,466
PNW (M$)	-21,221	50,328	49,626	43,324	28,329
Combined Forests Totals					
Timber Volume (MCF)	137,424	136,652	120,841	21,236	28,252
LTSYC (MCF/Year)	20,428	20,216	25,191	3,321	3,682
WFUD	2,710	2,810	2,753	2,828	2,845
Revenue (M$)	125,513	641,446	624,946	486,780	327,617
Costs (M$)	196,791	194,959	194,459	138,920	71,847
Net (M$)	-71,273	446,487	430,487	347,861	255,769
PNW (M$)	-58,581	366,980	353,830	285,915	210,224

Period 2	Maximum PNW Market Only	Maximum PNW Market & Nonmarket	Maximum Timber	Maximum WFUD	Minimum Level
Apalachicola NF					
Timber Volume (MCF)	51,846	51,886	56,747	4,752	4,000
LTSYC (MCF/Year)	7,772	8,022	10,725	812	642
WFUD	486	489	472	541	538
Revenue (M$)	54,821	155,877	158,994	56,894	59,538
Costs (M$)	63,741	63,756	67,516	37,432	17,198
Net (M$)	-8,918	92,121	91,477	19,462	42,340
PNW (M$)	-13,633	121,720	117,878	23,553	56,226
Ocala NF					
Timber Volume (MCF)	81,560	79,294	76,073	15,929	20,001
LTSYC (MCF/Year)	9,271	8,788	10,501	1,910	2,398
WFUD	2,058	2,144	2,022	2,075	2,098
Revenue (M$)	59,049	413,428	405,392	363,832	230,034
Costs (M$)	95,554	94,370	96,548	63,352	36,284
Net (M$)	-36,504	319,058	308,844	300,480	193,751
PNW (M$)	-48949	423,246	408,609	396,691	256,761
Osceola NF					
Timber Volume (MCF)	19,753	19,657	20,553	6,200	4,249
LTSYC (MCF/Year)	3,385	3,406	3,965	869	642
WFUD	360	400	402	406	402
Revenue (M$)	20,205	111,415	110,668	96,269	56,233
Costs (M$)	45,665	45,582	42,476	38,188	18,811
Net (M$)	-25,460	65,833	60,377	58,081	37,422
PNW (M$)	-35,359	86,883	49,626	75,575	49,108
Combined Forests Totals					
Timber Volume (MCF)	153,159	150,837	153,373	26,881	28,250
LTSYC (MCF/Year)	20,428	20,216	25,191	3,591	3,682
WFUD	2,904	3,033	2,896	3,022	3,038
Revenue (M$)	134,075	680,720	675,054	516,995	345,805
Costs (M$)	204,960	203,708	206,540	138,972	72,293
Net (M$)	-70,882	477,012	460,698	378,023	273,513
PNW (M$)	-97,941	631,849	576,113	495,819	362,095

PNW - present net worth MCF - thousand cubic feet LTSYC - long-term sustained-yield capacity

WFUD - wildlife and fish user-day M$ - thousands of dollars

Table B.5 (cont.)

Period 3	Maximum PNW	Maximum PNW	Maximum	Maximum	Minimum

	Market Only	Market & Nonmarket	Timber	WFUD	Level
Apalachicola NF					
Timber Volume (MCF)	60,581	77,309	77,482	5,462	4,000
LTSYC (MCF/Year)	7,772	8,022	10,725	812	642
WFUD	470	476	444	573	567
Revenue (M$)	98,943	203,473	189,744	61,931	61,028
Costs (M$)	79,989	79,672	81,426	38,921	17,158
Net (M$)	18,954	123,801	108,318	23,010	43,870
PNW (M$)	-6,523	168,160	158,510	32,185	72,682
Ocala NF					
Timber Volume (MCF)	81,561	79,295	81,754	15,929	19,999
LTSYC (MCF/Year)	9,271	8,788	10,501	1,910	2,398
WFUD	1,874	2,056	1,910	2,121	2,115
Revenue (M$)	71,572	428,338	429,332	379,216	240,370
Costs (M$)	98,366	95,434	100,641	63,368	36,677
Net (M$)	-26,793	332,905	328,691	315,848	203,693
PNW (M$)	-59,000	548,124	531,907	515,171	333,170
Osceola NF					
Timber Volume (MCF)	30,370	30,200	31,042	8,070	4,250
LTSYC (MCF/Year)	3,385	3,406	3,965	869	642
WFUD	384	391	391	425	418
Revenue (M$)	36,437	131,045	130,114	103,090	59,408
Costs (M$)	51,300	51,213	51,899	39,234	18,785
Net (M$)	-14,862	79,831	78,215	63,857	40,623
PNW (M$)	-40,934	116,829	114,726	99,529	64,346
Combined Forests Totals					
Timber Volume (MCF)	172,512	186,804	190,278	29,461	28,249
LTSYC (MCF/Year)	20,428	20,216	25,191	3,591	3,682
WFUD	2,728	2,923	2,745	3,119	3,100
Revenue (M$)	206,952	762,856	749,190	544,237	360,806
Costs (M$)	229,655	226,319	233,966	141,523	72,620
Net (M$)	-22,701	536,537	515,224	402,715	288,186
PNW (M$)	-106,457	833,113	805,143	646,885	470,198

PNW - present net worth MCF - thousand cubic feet LTSYC - long-term sustained-yield capacity
WFUD - wildlife and fish user-day M$ - thousands of dollars

Socioeconomic Impact Analysis

Overview

Socioeconomic impact analysis methods are used to estimate the relationships between recreation and timber harvest activities that occur on the national forests and the people living in the counties that are adjacent to national forest lands. Impacts have been estimated for five 10-year planning periods; however, only the impacts for the first period are displayed.

Forest-related economic impacts on employment, income, and State and local government revenues are directly related to the social well-being of people in the impact area. As the mix and level of outputs from national forests change, these impacts can result in changes in the economic well-being of these people. Other variables such as population, life-styles, attitudes, beliefs, values, and social organization are effected by Forest Service activities.

Impact Analysis Area

The first step in performing a socioeconomic impact analysis is to determine the area where the majority of impacts from Forest Service activities take place. Counties selected for timber impacts are those that are immediately

adjacent to national forest lands, or are those with forest processing mills that receive products from national forest lands. Counties that have national forest lands within their boundaries were used to determine the 25 percent fund and recreation impacts. Table B.6 displays the impact areas for the Apalachicola, Ocala, and Osceola NFs.

Table B.6

Impact Areas

National Forest	Counties
Apalachicola	Bay,* Calhoun,* Franklin, Gadsden,* Gulf,* Leon, Liberty, Madison,* Taylor,* Wakulla, Early* (Georgia), Grady* (Georgia), and Thomas* (Georgia)
Ocala	Alachua,* Lake, Marion, Putnam, and Volusia*
Osceola	Alachua,* Baker, Columbia, Duval,* and Nassau,* and Loundes* (Georgia)

*Used for timber only.

Economic Impact Model

IMPLAN (impact for planning model) is an economic input/output computer program used to estimate income, employment, and population impacts that are a result to a change in economic outputs.

Input/Output analysis is based on the interdependencies of the production and consumption elements of the economy within the impact areas. Industries purchase from primary sources (raw materials and other industries (manufactured goods) for use in their production process. These outputs are sold either to other industries for use in their production process or to final consumers. The structure of interdependencies between individual sectors of the economy forms the basis of the input/output model. The flow of industrial inputs can be traced through the input/output accounts to show the linkages in the impact area economy. This allows the determination of estimated economic effects (in terms of employment and income).

IMPLAN models provide estimates of direct, indirect, and induced impacts:

Direct Impacts - Changes in jobs and income for people working in the industry where the changes in outputs occur.

Indirect Impacts - Changes in jobs and income for people working in the industries that provide supplies to the industry where the changes in outputs occur.

Induced Impacts - Changes in jobs and income due to changes in household spending patterns caused by the direct and indirect impacts.

Total Impacts: The sum of the direct, indirect, and induced effects.

For example, if a national forest increases timber production, this would cause timber mills to produce more outputs. These additional outputs would cause an increase in mill employment and income. This increase in employment and income impacts in the mills is the *direct impact*.

The timber mills would then require additional input in terms of the timber raw material from the timber sale operators, and other supplies needed to operate the mills. These additional inputs also cause

an increase in employment and income from the industries that provide the additional inputs. This increase in employment and income impacts is the *indirect impact*.

Both of the above effects cause households that include people employed in the mills and in the supporting industries to make additional purchases within the impact area. This in turn stimulates additional production in many sectors of the economy. These effects are termed *induced impacts*.

Impacts to Jobs and Incomes

Impacts in terms of jobs and incomes were estimated for the first five decades of the Forest Plan. The following tables show the total estimated impacts.

The data base used for each of the three models includes aggregated county data that consists of a variety of economic data for each of some 528 economic sectors. Sectors are defined by the Bureau of Economic Analysis (Department of Commerce), and the Standard Industrial Classification used by the U.S. Office of Management and Budget. The model uses this data along with inputs relative to economic changes to be analyzed.

1993 county data were used for this analysis. Data were inflated to 1995 levels to correspond with the data used in the FORPLAN model.

Changes in timber receipts for the three forests were used to estimate changes in the 25 percent fund. These funds are paid to the counties, which in turn uses them for education and road construction/maintenance. Timber receipts were used because this averages 89 percent of total receipts on the national forests in Florida.

Impacts were developed as response coefficients for each forest. These coefficients, displayed in Table B.7, were multiplied by resource outputs by alternative to estimate employment and income effects. For example, each MMCF of pine sawtimber produced on the Apalachicola NF would result in 93.5 jobs and $3.72 million income. Tables B.8 through B.10 show the estimated jobs and income for the first 10-year period. Estimate jobs and income for periods 2 through 5 are available in the process records.

Forest Service expenditure impacts and personal consumption expenditure impacts were included and based on actual expenditures for 1992 and inflated to 1995 dollars.

Table B.7

IMPLAN Response Coefficients

Apalachicola National Forest			
Activity	**Units**	**Jobs**	**Income (MM$)**
Timber			
Pine Sawtimber	MMCF	93.5	3.72
Pine Roundwood	MMCF	113.1	4.28
Hardwood Sawtimber	MMCF	66.1	2.63
Hardwood Roundwood	MMCF	83.1	3.14
Timber - 25% Fund			
Roads	MM$	25.2	.82
Education	MM$	41.6	1.13
Recreation			
Big Game Hunting	M Trips	.3	.005
Small Game Hunting	M Trips	.3	.005
Nonconsumptive Wildlife	M Trips	.3	.005
Freshwater Fishing	M Trips	.3	.005
Developed Sites	M Trips	1	.025
Mechanical Travel/Wilderness	M Trips	1.4	.033
All Other Recreation	M Trips	1.8	.042
Trail Use	M Trips	1.1	.028

Ocala National Forest			
Activity	**Units**	**Jobs**	**Income (MM$)**
Timber			
Pine Sawtimber	MMCF	89.3	3.64
Pine Roundwood/Sand Pine	MMCF	127.2	4.81
Hardwood Sawtimber	MMCF	63.7	2.59
Hardwood Roundwood	MMCF	93.8	3.54
Timber - 25% Fund			
Roads	MM$	27.4	.89
Education	MM$	42.9	1.15
Recreation			
Big Game Hunting	M Trips	.3	.005
Small Game Hunting	M Trips	.3	.005
Nonconsumptive Wildlife	M Trips	.3	.005
Freshwater Fishing	M Trips	.3	.005
Developed Sites	M Trips	1	.025
Mechanical Travel/Wilderness	M Trips	1.4	.033
All Other Recreation	M Trips	1.8	.042
Trail Use	M Trips	1.1	.028

Osceola National Forest			
Activity	**Units**	**Jobs**	**Income (MM$)**
Timber			
Pine Sawtimber	MMCF	104.8	4.51
Pine Roundwood	MMCF	218.7	9.76
Hardwood Sawtimber	MMCF	76.9	3.30
Hardwood Roundwood	MMCF	160.8	7.17
Timber - 25% Fund			
Roads	MM$	24.3	.72
Education	MM$	42.1	1.04
Recreation			
Big Game Hunting	M Trips	.3	.005
Small Game Hunting	M Trips	.3	.005
Nonconsumptive Wildlife	M Trips	.3	.005
Freshwater Fishing	M Trips	.3	.005
Developed Sites	M Trips	1	.025
Mechanical Travel/Wilderness	M Trips	1.4	.033
All Other Recreation	M Trips	1.8	.042
Trail Use	M Trips	1.1	.028

IMPLAN - impact analysis planning
MM$ - millions of dollars
MMCF - million cubic feet
M Trips - thousand trips

Table B.8

Timber-Processing Impacts—First Period

Apalachicola National Forest

Alternative	Timber Product	Volume/MCF	Jobs	Income (MM$)
A	Pine Sawtimber	7,379	690	27
	Pine Roundwood	12,902	1,459	55
	Hardwood Sawtimber	2,079	137	5
	Hardwood Roundwood	396	33	1
	TOTAL	**22,756**	**2,319**	**88**
B	Pine Sawtimber	14,527	1,358	54
	Pine Roundwood	12,402	1,403	53
	Hardwood Sawtimber	0	0	0
	Hardwood Roundwood	0	0	0
	TOTAL	**26,929**	**2,761**	**107**
C	Pine Sawtimber	13,172	1,232	49
	Pine Roundwood	15,490	1,752	66
	Hardwood Sawtimber	16,761	1,108	44
	Hardwood Roundwood	3,193	265	10
	TOTAL	**48,616**	**4,357**	**169**
D	Pine Sawtimber	12,922	1,208	48
	Pine Roundwood	7,503	849	32
	Hardwood Sawtimber	0	0	0
	Hardwood Roundwood	0	0	0
	TOTAL	**20,425**	**2,057**	**80**
E	Pine Sawtimber	18,481	1,728	69
	Pine Roundwood	16,717	1,891	72
	Hardwood Sawtimber	0	0	0
	Hardwood Roundwood	0	0	0
	TOTAL	**35,198**	**3,619**	**141**

Ocala National Forest

Alternative	Timber Product	Volume/MCF	Jobs	Income (MM$)
A	Pine Sawtimber	909	81	3
	Pine Roundwood/Sand Pine	73,659	9,369	354
	Hardwood Sawtimber	1,071	68	3
	Hardwood Roundwood	204	19	1
	TOTAL	**75,843**	**9,537**	**361**
B	Pine Sawtimber	2,695	241	10
	Pine Roundwood/Sand Pine	49,309	6,272	237
	Hardwood Sawtimber	0	0	0
	Hardwood Roundwood	0	0	0
	TOTAL	**52,004**	**6,513**	**247**
C	Pine Sawtimber	7,363	658	27
	Pine Roundwood/Sand Pine	59,903	7,620	288
	Hardwood Sawtimber	5,667	361	15
	Hardwood Roundwood	1,079	101	4
	TOTAL	**74,012**	**8,740**	**334**
D	Pine Sawtimber	4,716	421	17
	Pine Roundwood/Sand Pine	45,975	5,848	221
	Hardwood Sawtimber	0	0	0
	Hardwood Roundwood	0	0	0
	TOTAL	**50,691**	**6,269**	**238**
E	Pine Sawtimber	2,484	222	9

Pine Roundwood/Sand Pine	56,413	7,176	271
Hardwood Sawtimber	0	0	0
Hardwood Roundwood	0	0	0
TOTAL	**58,897**	**7,398**	**280**

MCF - thousand cubic feet MM$ - millions of dollars

Table B.8 (cont.)

Osceola National Forest				
Alternative	**Timber Product**	**Volume/MCF**	**Jobs**	**Income (MM$)**
A	Pine Sawtimber	67	7	.3
	Pine Roundwood	1,558	341	34
	Hardwood Sawtimber	1,193	92	4
	Hardwood Roundwood	227	37	2
	TOTAL	**3,045**	**477**	**40.3**
B	Pine Sawtimber	1,769	185	8
	Pine Roundwood	1,440	315	14
	Hardwood Sawtimber	0	0	0
	Hardwood Roundwood	0	0	0
	TOTAL	**3,209**	**500**	**22**
C	Pine Sawtimber	3,356	352	35
	Pine Roundwood	1,828	400	18
	Hardwood Sawtimber	8,590	661	28
	Hardwood Roundwood	1,636	263	12
	TOTAL	**15,410**	**1,676**	**93**
D	Pine Sawtimber	2,321	243	10
	Pine Roundwood	1,683	368	16
	Hardwood Sawtimber	0	0	0
	Hardwood Roundwood	0	0	0
	TOTAL	**4,004**	**611**	**26**
E	Pine Sawtimber	4,597	482	21
	Pine Roundwood	4,276	935	42
	Hardwood Sawtimber	0	0	0
	Hardwood Roundwood	0	0	0
	TOTAL	**8,873**	**1,417**	**63**

MCF - thousand cubic feet

Table B.9

25 Percent Fund Impacts—First Period

Apalachicola National Forest					
Alternative	**Timber Product**	**Receipts (MM$)**	**25% Fund (MM$)**	**Jobs**	**Income (MM$)**
A	Pine Sawtimber	11.81	2.95		
	Pine Roundwood	7.16	1.79		
	Hardwood Sawtimber	2.34	.59		
	Hardwood Roundwood	.16	.04		
	TOTAL	**21.47**	**5.37**	**359**	**10.49**
B	Pine Sawtimber	23.24	5.81		
	Pine Roundwood	6.88	1.72		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**30.12**	**7.53**	**503**	**14.71**
C	Pine Sawtimber	21.08	5.27		
	Pine Roundwood	8.60	2.15		
	Hardwood Sawtimber	18.93	4.74		

	Hardwood Roundwood	1.28	.32		
	TOTAL	**49.89**	**12.48**	**833**	**24.36**
D	Pine Sawtimber	20.68	5.17		
	Pine Roundwood	4.16	1.04		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**24.84**	**6.21**	**415**	**12.13**
E	Pine Roundwood	29.57	7.39		
	Pine Sawtimber	9.28	2.32		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**38.85**	**9.71**	**649**	**19.50**

MM$ - millions of dollars

Table B.9 (cont.)

		Ocala National Forest			
Alternative	**Timber Product**	**Receipts (MM$)**	**25% Fund (MM$)**	**Jobs**	**Income (MM$)**
A	Pine Sawtimber	1.45	.36		
	Pine Roundwood	40.88	10.22		
	Hardwood Sawtimber	1.21	.30		
	Hardwood Roundwood	.08	.02		
	TOTAL	**43.62**	**10.90**	**767**	**22.32**
B	Pine Sawtimber	4.31	1.08		
	Pine Roundwood	27.37	6.84		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**31.68**	**7.92**	**557**	**16.21**
C	Pine Sawtimber	11.78	2.95		
	Pine Roundwood	33.25	8.31		
	Hardwood Sawtimber	6.40	1.60		
	Hardwood Roundwood	.43	.11		
	TOTAL	**51.86**	**12.97**	**911**	**26.54**
D	Pine Sawtimber	7.55	1.89		
	Pine Roundwood	25.52	6.38		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**33.07**	**8.27**	**581**	**16.92**
E	Pine Sawtimber	3.97	.99		
	Pine Roundwood	31.31	7.83		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**35.28**	**8.82**	**620**	**18.05**
		Osceola National Forest			
Alternative	**Timber Product**	**Receipts (MM$)**	**25% Fund (MM$)**	**Jobs**	**Income (MM$)**
A	Pine Sawtimber	.11	.03		
	Pine Roundwood	.86	.22		
	Hardwood Sawtimber	1.35	.34		
	Hardwood Roundwood	.09	.02		
	TOTAL	**2.41**	**.61**	**40**	**1.06**
B	Pine Sawtimber	2.83	.71		

	Pine Roundwood	.80	.20		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**3.63**	**.91**	**60**	**1.59**
C	Pine Sawtimber	5.37	1.34		
	Pine Roundwood	1.01	.25		
	Hardwood Sawtimber	9.71	2.43		
	Hardwood Roundwood	.65	.16		
	TOTAL	**16.74**	**4.18**	**278**	**7.35**
D	Pine Sawtimber	3.71	.93		
	Pine Roundwood	.93	.23		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**4.64**	**1.16**	**77**	**2.04**
E	Pine Sawtimber	7.36	1.84		
	Pine Roundwood	2.37	.59		
	Hardwood Sawtimber	0	0		
	Hardwood Roundwood	0	0		
	TOTAL	**9.73**	**2.43**	**161**	**4.27**

MM$ - millions of dollars

Table B.10

Recreation Impacts—First Period

Apalachicola National Forest

Alternative	Type of Recreation	MRVDs	M Trips per MRVDs	Jobs	Income (MM$)
A	Big Game Hunting	426	306	92	1.64
	Small Game Hunting	65	47	14	.23
	Nonconsumptive Wildlife	68	71	21	.39
	Freshwater Fishing	544	391	117	1.89
	Developed Sites	1,923	1,644	1,644	41.73
	Mechanical Travel/Wilderness	735	628	879	20.48
	All Other Recreation	299	311	560	13.04
	Trail Use	208	177	195	4.95
	TOTAL	**4,268**	**3,575**	**3,522**	**84.35**
B	Big Game Hunting	435	313	94	1.67
	Small Game Hunting	66	47	14	.24
	Nonconsumptive Wildlife	72	75	23	.41
	Freshwater Fishing	571	411	123	1.98
	Developed Sites	1,930	1,650	1,650	41.89
	Mechanical Travel/Wilderness	771	659	923	21.49
	All Other Recreation	313	326	587	13.68
	Trail Use	218	186	205	5.21
	TOTAL	**4,376**	**3,667**	**3,619**	**86.57**
C	Big Game Hunting	454	327	98	1.75
	Small Game Hunting	66	47	14	.24
	Nonconsumptive Wildlife	68	71	21	.39
	Freshwater Fishing	544	391	117	1.89
	Developed Sites	1,923	1,644	1,644	41.73
	Mechanical Travel/Wilderness	735	628	879	20.48
	All Other Recreation	299	311	560	13.04
	Trail Use	208	177	195	4.95

	TOTAL	**4,297**	**3,596**	**3,528**	**84.47**
D	Big Game Hunting	441	317	95	1.70
	Small Game Hunting	66	47	14	.24
	Nonconsumptive Wildlife	75	78	23	.43
	Freshwater Fishing	598	430	129	2.08
	Developed Sites	1,938	1,657	1,657	42.06
	Mechanical Travel/Wilderness	808	690	966	22.50
	All Other Recreation	329	342	616	14.35
	Trail Use	229	195	215	5.46
	TOTAL	**4,484**	**3,756**	**3,715**	**88.82**
E	Big Game Hunting	430	309	93	1.65
	Small Game Hunting	67	47	14	.24
	Nonconsumptive Wildlife	72	75	23	.41
	Freshwater Fishing	571	411	123	1.98
	Developed Sites	1,930	1,650	1,650	41.89
	Mechanical Travel/Wilderness	771	659	923	21.49
	All Other Recreation	313	326	587	13.68
	Trail Use	218	186	205	5.21
	TOTAL	**4,372**	**3,663**	**3,618**	**86.55**

MRVDs - thousand recreation visitor-days M Trips - thousand trips MM$ - millions of dollars

Table B.10 (cont.)

		Ocala National Forest			
Alternative	**Type of Recreation**	**MRVDs**	**M Trips per MRVDs**	**Jobs**	**Income (MM$)**
A	Big Game Hunting	1,854	1,334	400	7.13
	Small Game Hunting	121	87	26	.43
	Nonconsumptive Wildlife	158	165	49	.90
	Freshwater Fishing	1,147	825	248	3.98
	Developed Sites	12,694	10,850	10,850	275.48
	Mechanical Travel/Wilderness	3,947	3,374	4,723	109.99
	All Other Recreation	701	731	1,315	30.64
	Trail Use	1,037	887	975	24.75
	TOTAL	**21,659**	**18,253**	**18,586**	**453.30**
B	Big Game Hunting	1,810	1,302	391	6.96
	Small Game Hunting	134	96	29	.48
	Nonconsumptive Wildlife	158	165	49	.90
	Freshwater Fishing	1,149	827	248	3.99
	Developed Sites	12,720	10,872	10,872	276.05
	Mechanical Travel/Wilderness	3,955	3,380	4,733	110.21
	All Other Recreation	703	732	1,318	30.70
	Trail Use	1,040	889	978	24.81
	TOTAL	**21,669**	**18,263**	**18,618**	**454.10**
C	Big Game Hunting	1,706	1,227	368	6.56
	Small Game Hunting	204	147	44	.73
	Nonconsumptive Wildlife	158	165	49	.90
	Freshwater Fishing	1,147	825	248	3.98
	Developed Sites	12,694	10,850	10,850	275.48
	Mechanical Travel/Wilderness	3,947	3,374	4,723	109.99
	All Other Recreation	701	731	1,315	30.64

	Trail Use	1,037	887	975	24.75
	TOTAL	**21,594**	**18,206**	**18,572**	**453.03**
D	Big Game Hunting	1,662	1,196	359	6.39
	Small Game Hunting	150	108	32	.54
	Nonconsumptive Wildlife	161	168	50	.92
	Freshwater Fishing	1,169	841	252	4.06
	Developed Sites	12,735	10,885	10,885	276.37
	Mechanical Travel/Wilderness	4,026	3,441	4,818	112.20
	All Other Recreation	715	745	1,341	31.25
	Trail Use	1,058	904	995	25.25
	TOTAL	**21,676**	**18,288**	**18,732**	**456.98**
E	Big Game Hunting	1,918	1,380	414	7.38
	Small Game Hunting	130	94	28	.46
	Nonconsumptive Wildlife	159	166	50	.91
	Freshwater Fishing	1,156	832	249	4.01
	Developed Sites	12,711	10,864	10,864	275.85
	Mechanical Travel/Wilderness	3,979	3,401	4,761	110.88
	All Other Recreation	707	737	1,326	30.89
	Trail Use	1,046	894	983	24.96
	TOTAL	**21,806**	**18,368**	**18,675**	**455.34**

MRVDs - thousand recreation visitor-days M Trips - thousand trips MM$ - millions of dollars

Table B.10 (cont.)

Osceola National Forest

Alternative	Type of Recreation	MRVDs	M Trips per MRVDs	Jobs	Income (MM$)
A	Big Game Hunting	338	243	73	1.30
	Small Game Hunting	28	20	6	.10
	Nonconsumptive Wildlife	0	0	0	0.00
	Freshwater Fishing	226	163	49	.78
	Developed Sites	4,199	3,588	3,588	91.12
	Mechanical Travel/Wilderness	165	141	197	4.59
	All Other Recreation	263	74	493	11.48
	Trail Use	206	176	194	4.91
	TOTAL	**5,425**	**4,405**	**4,600**	**114.28**
B	Big Game Hunting	331	238	71	1.27
	Small Game Hunting	29	21	6	.10
	Nonconsumptive Wildlife	0	0.00	0	0.00
	Freshwater Fishing	230	165	50	.80
	Developed Sites	4,208	3,596	3,596	91.31
	Mechanical Travel/Wilderness	169	144	202	4.70
	All Other Recreation	268	279	502	11.69
	Trail Use	210	179	197	5.01
	TOTAL	**5,445**	**4,622**	**4,624**	**114.88**
C	Big Game Hunting	342	246	74	1.32
	Small Game Hunting	26	19	6	.09
	Nonconsumptive Wildlife	0	0	0	0.00
	Freshwater Fishing	226	163	49	.78
	Developed Sites	4,199	3,588	3,588	91.12
	Mechanical Travel/Wilderness	165	141	197	4.59

	All Other Recreation	263	274	493	11.48
	Trail Use	206	176	194	4.91
	TOTAL	**5,427**	**4,607**	**4,601**	**114.29**
D	Big Game Hunting	335	241	72	1.29
	Small Game Hunting	30	22	6	.11
	Nonconsumptive Wildlife	0	0	0	0.00
	Freshwater Fishing	237	171	51	.82
	Developed Sites	4,334	3,704	3,704	94.06
	Mechanical Travel/Wilderness	173	148	207	4.82
	All Other Recreation	276	287	517	12.04
	Trail Use	216	185	203	5.16
	TOTAL	**5,601**	**4,758**	**4,760**	**118.30**
E	Big Game Hunting	317	228	68	1.22
	Small Game Hunting	29	21	6	.10
	Nonconsumptive Wildlife	0	0	0	0.00
	Freshwater Fishing	230	165	50	.80
	Developed Sites	4,208	3,596	3,596	91.31
	Mechanical Travel/Wilderness	169	144	202	4.70
	All Other Recreation	268	279	502	11.69
	Trail Use	210	179	197	5.01
	TOTAL	**5,431**	**4,612**	**4,621**	**114.83**

MRVDs - thousand recreation visitor-days M Trips - thousand trips MM$ - millions of dollars

APPENDIX C

EVALUATION OF RARE II AREAS

National Forests in Florida has 14 RARE II areas, plus an area on the Osceola National Forest (NF) called Pinhook Swamp. Pinhook Swamp has been evaluated as a roadless area for the Forest Plan revision process. These areas have a combined total of 99,686 acres. For discussion purposes, these areas are referred to as roadless areas, although some of them contain roads as permitted in FSH 1909.12, *Land and Resource Management Planning Handbook*.

Each roadless area was evaluated for its wilderness potential, using a report format in accord with CFR 219.17. These reports consider wilderness potential in three categories: capability (the qualities that make an area suitable or unsuitable for wilderness), availability (assessing the wilderness and nonwilderness resources and local demands on the area), and need (existence of other wilderness in the area and trends in use).

The following is a list of the roadless areas and their acreages:

Roadless Area	Acres
Alexander Springs Scenic Area	4,237
Baptist Lake	8,525
Bay Creek	5,645
Black Creek Islands	8,560
Buck Lake	5,680
Clear Lake WSA	5,635
Farles Prairie	2,467
Gum Bay	9,180
Impassable Bay	5,760
Long Bay	8,084
Natural Area WSA	4,400
Pinhook Swamp	15,403
Post Office Bay	7,280
Providence	6,885
Savannah	1,945
TOTAL	**99,686**

WSA = wilderness study area

Note: Acres are approximate.

Locations of each of these roadless areas are show on the roadless area inventory maps in Chapter 3.

Alexander Springs Scenic Area Roadless Area

I. DESCRIPTION

Acres: 4,237 Acres

Location and vicinity: Alexander Springs Scenic Area is in the southeastern portion of the Seminole Ranger District (RD), Ocala NF, Marion County, Florida. It is about 10 miles northeast of Umatilla. It is bordered on the north by Forest Road (FR) 552 and State Highway 445, on the east by FR 552, on the south by FR 539 and FR 538-1, and on the west by FR 538-1 and State Highway 445. It is located in Township 16 South and Range 27 East.

Access, including roads and trails leading to the area: Access is by the boundary roads listed above and Forest Roads 538-A and 539-B. In addition, access is by the Florida National Scenic Trail (FNST) and by Alexander Springs Creek.

General description of the area geography: The area is nearly level and poorly drained. Large and small poorly defined drainages, small grassy sloughs, and depressions are common. Alexander Springs Creek dissects the area from west to east.

General description of the area topography: The topography is nearly flat. Elevations range from less than 10 feet to about 55 feet. Area has broad, nearly level ridges and broad, flat drains.

General description of the area vegetation, including the ecosystem types: The ridges contain slash and longleaf pine with palmetto and oak understory. The drains contain loblolly bay, maple, and other wetland species. Ecosystems include flatwoods (slash pine/palmetto) and bottomland hardwoods.

Key attractions, including sensitive wildlife and scenic landmarks: The key attraction is Alexander Springs Creek, which flows through the area. A third-magnitude spring feeds the creek and is used heavily at the developed recreation area located at the spring. Wildlife includes the sensitive Florida black bears and the threatened American alligators.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Past human activities included collecting naval stores, prescribed burning, and timber harvesting. Present uses include foot travel (the FNST passes through the southern part of the area) and prescribed burning. About 130 acres were salvaged in 1992, but there are no immediate plans for any artificial reforestation activities. The area is designated as a scenic area. These activities have not affected natural ecological processes and conditions.

To what degree is the area natural or natural appearing and free from disturbance? The area appears natural, but one can identify areas of previous timber harvests, old roads, a boat ramp, drainage ditches, several recreation residences, a cemetery, and the FNST, which detract from the naturalness of the area.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? Effects of the previous human activities are slowly becoming muted and the area is regaining a natural appearance.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? There are no apparent ownership patterns that would preclude perpetuation of wilderness values. However, the land is public domain and is available for mining claims. The recreation residences on Forest Service land impose a nonconformity to wilderness values.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features, or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old (do not include areas of significant current mineral activity): None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.
Recreation improvements such as occupancy spots or minor hunting or outfitter camps: There are 30 recreation residences along the creek, a boat ramp at the FR 552 landing, a 4-mile section of the FNST, and an old cemetery.

Timber harvest areas where logging and prior road construction are or are not evident: Two salvage sales from 1992 are evident, with a combined acreage of 130 acres.

Cultural treatments involving plantations or plantings: None.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: The 30 recreation residences are nonconforming structures, as well as the FR 552 landing boat ramp and cemetery.

Ground-return telephone lines: Overhead power and telephone lines exist for the recreation residences.

Watershed treatment areas: Tracy Canal needs watershed restoration; a plan was completed in 1991. Alexander Springs Creek is an Outstanding Florida Water and is being studied for potential National Wild and Scenic River status.

Roads: Two roads access the recreation residences, FRs 538-A and 539-B. There are three level D roads in the area and three primitive roads that are closed to use and are returning to their natural state. This is a vehicle-restricted area. There are 2.2 miles of roads, which exceeds the maximum roadless criteria (2.1 miles).

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? It would be difficult to terminate the recreation residence leases. The FNST could be relocated to outside the area. Past timber harvest areas and old roads would be eventually masked by natural revegetation.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Roads not on the Transportation System are slowly disappearing by natural actions.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? There are many opportunities for

solitude and serenity in the area. Factors detracting from solitude and serenity are military overflights in the area, roads that bound the area on all sides, and the presence of motorboats in Alexander Springs Creek.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? Access is by system roads (boundaries of the area) and the FNST trailhead. Opportunities to experience adventure or use initiative are similar to those for other small undisturbed areas of the eastern United States. Canoeing Alexander Springs Creek offers elements of challenge and adventure.

Outdoor Recreation Opportunities. What is the area's capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - Hunting is not allowed in the scenic area.

Fishing - Alexander Springs Creek offers opportunities for fishing.

Canoeing - Alexander Springs Creek offers opportunities for canoeing.

Boating - Motorboats can be used in Alexander Springs Creek.

River Rafting - None.

Backpacking - The FNST offers opportunity for backpacking.

Hiking - The FNST and a proposed new trail will provide additional opportunities for hiking.

Riding - None.

Photography - Many opportunities exist for photography and nature study.

Swimming - Alexander Springs Creek offers swimming and snorkeling.

Special Features: Alexander Springs Creek is an Outstanding Florida Water. The Ocala vetch is found only on Alexander Springs Creek. There are small areas of the longleaf pine-wiregrass ecosystem.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? Opportunities for informal outdoor education and scientific study are limited, except for archeological research.

Is there an abundant and varied wildlife population? Wildlife populations are typical of those found in undisturbed areas of central Florida. There is an abundance of waterfowl—such as egrets, gallinules, herons, ibis, kingfishers, limpkins, and wood storks.

Manageability

What are the characteristics of the surrounding area including Recreation Opportunity Spectrum (ROS) classification, adopted visual quality objective (VQO), and present and planned uses?

ROS - Semiprimitive Nonmotorized

VQO - Retention

Planned Use - The area will continue to be protected as a scenic area.

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? Yes.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? Yes.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: Recreation residences are present. Recreation activities include boating, canoeing, fishing, and hiking.

Information on Wildlife Species, Populations, and Management Needs: There is little habitat available for threatened Florida scrub-jays. Florida black bears, gopher tortoises, and other species typical of the ecosystems are present. Management needs can be performed with prescribed fire.

Water Availability and Use: Alexander Springs Creek is an Outstanding Florida Water. The creek provides water for fishery and wildlife populations and recreation. The recreation residences use wells for water supply.

Livestock Operations: None.

Timber: Salvage cutting only for insect and disease infestations.

Minerals: None.

Cultural Resources: Only the areas salvaged have been surveyed and there were no significant cultural sites. Potential for undiscovered cultural resources is high.

Authorized and Potential Land Uses: Recreation residences, telephone and power lines, and concessionaire/outfitter at Alexander Springs Campground.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: The first prescribed fire was conducted in FY 92 after 30 years of fire suppression. Prescribed burning is planned on a 3-5 year cycle in the future. Salvage cuttings for insect and disease infestations are permitted.

What outputs are currently produced or could be produced in the future? Recreation, water, and nonconsumptive wildlife use. Collection of miscellaneous forest products is not allowed.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No. However, the recreation residences contribute to the district's persons-at-one-time (PAOT) targets.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? Yes. Recreation residences are under 20-year special-use agreements.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Alexander Springs Scenic Area is directly between Billies Bay Wilderness and Alexander Springs Wilderness.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Billies Bay Wilderness and Alexander Springs Wilderness areas receive a combined total of 3.6 MRVDs (thousand recreation visitor-days) per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of Florida is increasing at a rate of 800-1,000 people per day. Central Florida receives about 60 percent of this increase.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Yes. There are other areas on the district that are vehicle-restricted and offer primitive recreation experiences. Farles Prairie is managed as a roadless area and is located 7 miles from Alexander Springs Scenic Area.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? No.

Could these needs be provided for through means other than wilderness designation? N/A.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Baptist Lake Roadless Area

I. DESCRIPTION

Acres: 8,525

Location and vicinity: Baptist Lake is in the south central portion of the Seminole RD, Ocala NF, Marion County, Florida. It is bordered on the north by FR 573, on the west by FR 587-D, on the south by FR 587-1 and FR 587-2, and on the east by the Marion County line. It is located at T17S and R26E.

Access, including roads and trails leading to the area: Access on the north is by Forest Roads 573, 573-C, 573-D, 573-E, 573-H, on the west by FR 587-D and by the Prairie Trail, on the south by FRs 587-C, 587-1, 587-2, 566-A, and 597-3, and on the east by FR 597-J and 573-E and several horse trails.

General description of the area geography: The geography consists of low dunelike ridges interspersed with lakes, ponds, and prairies. Dissolution of limestone and the collapse of overlaying sandy strata have resulted in an undulating surface without a well-defined drainage system. Some lakes and shallow ponds are the result of dissolution of underlying limestone. Few well-defined streams exist, and this area is drained principally through the porous sand into underground aquifers.

General description of the area topography: The area is gently sloping with elevations ranging from 50 to 100 feet. A small portion of the eastern side contains small ponds, prairies, and stands of longleaf pine and slash pine. Most of the area consists of the sand pine-scrub oak ecosystem.

General description of the area vegetation, including the ecosystem types: The prairie areas/ponds contain tall grasses, cattails, and bluestems, typical vegetation for the ecosystem. Longleaf/slash pine stands contain a palmetto and gallberry understory. Sand pine stands include an understory of scrub oaks, scrub palmetto, and garberium. Age class distribution for pine areas range from about 3 years old to 60+ years.

Key attractions, including sensitive wildlife and scenic landmarks: There are no special attractions in the area that are not found in many other places in the forest. Wildlife includes sensitive Florida black bears and threatened Florida scrub-jays.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Past and present human activities include habitat management for proposed, endangered, threatened, or sensitive (PETS) species; horse trail designations with trail markers; timber harvesting; off-highway vehicle use; replanting; rights-of-way for power lines and a pipeline; road construction and maintenance; and site preparation. These activities have highly affected natural ecological processes.

To what degree is the area natural or natural appearing and free from disturbance? The area appears to be highly disturbed due to forest management and recreational activities.

If the area ecological processes or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? Forest management and wildlife habitat activities give the area a modified appearance. The land has not had

the opportunity to regain a natural, untrammeled appearance.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? No. Section 16 has reservation of one-half interest in all petroleum rights to construct canals, cuts, sluiceways for drainage or reclamation. There are also reservations for three-fourths interest in all phosphate, minerals, and metals. In addition, the lands on Ocala NF are public domain lands and open to mining claims under the 1872 Mining Law.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features, or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.
Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: Timber sales were sold in all compartments in FY 88. There are approved Decision Notices for timber sales in FY 95. These areas show evidence of previous harvesting and planting. There are many logging roads and skid trails in the harvested areas. Age classes range from about 3 years old to 60+ years with a balanced age distribution.

Cultural treatments involving plantations or plantings: All stands that were clearcut in the past received the proper cultural treatments for regenerations. Treatments include chopping, burning, seeding, planting, and herbicide application.

Private inholdings in the area: There are two areas of private land in the southeast corner of the area, totaling about 80 acres.

Dwellings on private inholdings: There are dwellings on the private land in the area.

Nonconforming structures and improvements: There are horse trail markers and fences along private inholdings.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are many level D roads throughout the area that are heavily used. The area has 17.3 miles of roads, which exceeds the criteria of .5 mile per 1,000 acres.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Activities and structures—such as the horse trail, bee apiary, and old fences—can be removed. It would be difficult to terminate the special-use permits for rights-of-way on the power lines and pipeline.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old roads in the area are kept open by the extensive hunting. Thinned pine plantations retain evidence of humans. Wildlife habitat manipulation for the threatened Florida scrub-jay overrules natural processes due to specific habitat needs.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? Due to the high use of the area for hunting and motorized access to all parts of the area, very little opportunity is available to experience solitude and serenity.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? Access is very easy due to roads bounding the area, several roads through the area, and several old logging roads that are maintained as horse trails. Four miles of the Prairie Trail, a horse trail, goes through the southern portion of the area and about 5 miles of the Baptist Lake horse trail goes through the area. There is some opportunity for elements of discovery and self-reliance, but the area does not offer many opportunities for adventure, excitement, and challenge.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - Hunting is allowed.

Fishing - There are few opportunities for fishing, provided mostly by small ponds and Baptist Lake.

Canoeing - None.

Boating - None.

River Rafting - None.

Backpacking - There are opportunities for backpacking on old logging roads and horse trails.

Hiking - There are opportunities for hiking along old logging roads and horse trails.

Riding - The many horse trails offer excellent opportunities for riding.

Photography - Good opportunities are available for photography and natural study.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area has the capability to provide informal outdoor education, but these opportunities are also available on other parts of the

Seminole RD. Since the area has had harvesting activities, few opportunities exist for scientific study of large, undisturbed areas.

Is there an abundant and varied wildlife population? Wildlife populations are typical of the general forested area of sand pine/slash pine.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Semiprimitive Motorized

VQO - Maximum Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes. All boundaries are forest roads.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Roads make access easy into the area.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. Noise from nearby forest roads and State Highway 19 penetrates the area.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: The primary recreational activities are hiking, horseback riding, and hunting. Other activities include low levels of primitive camping, fishing, and gathering forest products.

Information on Wildlife Species, Populations, and Management Needs: Wildlife includes Florida black bears, gopher tortoises, Florida scrub-jays, and other species typical of the area.

Water Availability and Use: There are a few small ponds and Baptist Lake.

Livestock Operations: None.

Timber: Harvesting operations occur in the sand pine and slash pine areas.

Minerals: None.

Cultural Resources: Probability is low in sand pine where harvesting occurs.

Authorized and Potential Land Uses: Special-use permits for rights-of-way along power lines and pipeline.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: Longleaf/slash pine stands and prairies are prescribed burn on a 3-to-5-year rotation. Salvage operations are permitted for insect and disease infestations.

What outputs are currently produced or could be produced in the future? Timber, game, and dispersed recreation activities.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? Yes, for the management of the threatened Florida scrub-jay.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? Yes, wood products.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? Yes, outstanding prospecting claims are in Sections 1, 2, 3, 11, and 12.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Billies Bay Wilderness is about 4 miles to the northeast, and Alexander Springs Wilderness is about 4 miles farther east.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Billies Bay Wilderness and Alexander Springs Wilderness areas receive a combined total of 3.6 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of Florida is increasing at the rate of 800-1,000 people per day. Central Florida is receiving about 60 percent of this increase.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? There are opportunities for dispersed recreation activities on similar lands in the Ocala NF.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? No.

Could these needs be provided for through means other than wilderness designation? N/A.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Bay Creek Roadless Area

I. DESCRIPTION

Acres: 5,645

Location and vicinity: This area is in the south central portion of the Apalachicola RD, Apalachicola NF, Liberty County, Florida. Map coordinates are T4S, R6W. The area is bound on the north by FR 111, on the east by section lines of Sections 3 and 10, on the south by Forest Highway (FH) 13, and on the west by FR 120.

Access, including roads and trails leading to the area: Access to the area is by FR 111, FH 13, and FR 120.

General description of the area geography: This area is very gently undulating and is poorly drained by a few permanent streams. The depth of the underlying bedrock of limestone and various layers of Miocene clastics and Pleistocene sands result in an impermeable strata that creates swampy lowlands. There are several irregular-shaped, shallow depressions that represent the undulations of the former Pleistocene sea bottom.

General description of the area topography: The area is nearly level and composed of 65 percent uplands and 35 percent lowland drainages. Elevations range from 50 to 110 feet.

General description of the area vegetation, including the ecosystem types: The dominant overstory vegetation is slash, longleaf, and pond pine with an understory of titi, palmetto, and gallberry. Most of the area is in unsuitable land-class acres, in titi and bottomland hardwoods. Hardwood types are dominated by bay. Slightly more than half of all unsuitable acres is in the 51-60+ year age class. Of the suitable land-class acres, 452 acres are in the 2-20 year age class and 495 acres are in the 21-30 year age class, indicating the slash pine has been heavily cut. The area contains only 496 acres of suitable land in the 51-60+ year age class.

Key attractions, including sensitive wildlife and scenic landmarks: None

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Recent human activities are very noticeable in the area. There are several areas of recent timber harvesting. Some old woods roads and firelines are visible. There is an extensive plantation off of FR 111 and several young plantations along FH 13 and FR 120. A primitive hunt camp is located off of FH 13, just west of FR 170. A bulletin board and signs are evident. An area off of FH 13 is flagged-off with survey ribbon and has signs prohibiting baiting in the area. Some older slash pine plantations have large wooden signs stating the date of planting and site preparation.

To what degree is the area natural or natural appearing and free from disturbance? The northern part of the area along FR 111 contains dense vegetation that completely blocks the view from the road. This gives that part of the area a very natural, undisturbed appearance. The rest

of the area appears to be in plantations, thus it appears less natural.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? Woods roads and firelines around young plantations keep the area in an altered condition; in addition, there is a permanent bridge on FR 120.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes, surface and subsurface are in Forest Service ownership.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

> Are any of the following types of areas, features, or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old (do not include areas of significant current mineral activity): None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: There is a primitive hunt camp off of FH 13.

Timber harvest areas where logging and prior road construction are or are not evident: There are logging roads off of FH 13, FR 111, and FR 120. There are 551 acres of pine plantations in the 0-10 year age class off of FH 13 and FR 120.

Cultural treatments involving plantations or plantings: None.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: A bee apiary is on FR 111.
Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are 4 system roads. The area has 3.70 miles of roads, which exceeds the maximum roadless criteria (2.8 miles).

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Nonconforming uses can be easily terminated or removed.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Woods roads can be rapidly affected by the forces of nature and quickly disappear. However, use during hunting season keeps some of these woods roads open.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without

regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? Opportunities to experience solitude and serenity exist in the interior of the area, allowing the visitor to feel isolated from the sights and sounds of civilization. Near the boundaries, road noise and other human activities negatively impact the solitude. Military overflights are common.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The area offers little opportunity for adventure, excitement, or challenge. Access is easy due to roads on all boundaries.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - Primitive camping is readily available.

Hunting - There are opportunities for hunting small and large game, and it is the primary recreational activity in the area.

Fishing - Fishing opportunities are limited.

Canoeing - Canoeing opportunities are limited. Bay Creek is a slow-moving, nonnavigable, intermittent blackwater stream.

Boating - None.

River Rafting - None.

Backpacking - Opportunities for backpacking are provided by old woods roads.

Hiking - Hiking opportunities exist along old woods roads.

Riding - Horseback riding opportunities exist along old woods roads.

Photography - There are opportunities for photography and nature study.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area can provide informal outdoor education, but these opportunities are also available on other parts of the Apalachicola RD.

Is there an abundant and varied wildlife population? Wildlife populations are typical of those found in the general longleaf/ slash pine ecosystems and cypress and black gum swamps.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Roaded Natural

VQO - Maximum Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Most boundaries are roads and are easily identifiable. The eastern boundary is a section line and would not be recognizable to forest users unless posted.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Most boundaries are roads, which allow easy access by motorized vehicles and mechanized equipment.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? Boundary roads provide minimal protection to the interior from the sights and sounds of civilization. Bay Creek is a remote area of the forest. Most impacts would come from the southern boundary, FH 13, and military overflights.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: Dispersed recreation activities include fishing, hiking, and hunting.

Information on Wildlife Species, Populations, and Management Needs:

> Management Indicator Species - red-cockaded woodpecker (RCW) and Florida black bear.

Water Availability and Use: Several intermittent and small perennial streams are in the area.

Livestock Operations: None.

Timber: The most recently harvested areas are in Compartments 42 and 47 and have been replanted. These areas of young pine plantations are reclaimed from encroaching titi from adjacent lowlands.

Minerals: None.

Cultural Resources: There is a historic tram in the area. Section 31 contains a historic site, and Section 6 contains a prehistoric site.

Authorized and Potential Land Uses: One special-use permit for a bee apiary.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: There is a fuel buildup of 3-4 years in the area. The area is periodically prescribed burned on a 3-4 year cycle. Insect and disease infestations are salvaged and harvested.

What outputs are currently produced or could be produced in the future? Timber and dispersed recreation activities such as primitive camping, fishing, hiking, and hunting.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of

improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? No.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Mud Swamp/New River Wilderness is about 3 miles to the south.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Mud Swamp/ New River Wilderness receives 2.0 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? Population of the surrounding area is stable.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? RCW clusters are in the area.

Could these needs be provided for through means other than wilderness designation? Yes, though administrative designations such as special interest areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Black Creek Islands Roadless Area

I. DESCRIPTION

Acres: 8,560

Location and vicinity: This area is in the southwestern portion of the Apalachicola RD, Apalachicola NF, Liberty County, Florida, just northeast of the town of Sumatra. Map coordinates are T4S, R7W and T5S, R7W. The area is bound on the south and east by FR 181, on the north and east by FR 100; on the easternmost point by a small portion of FR 114, and on the west by State Highway 65.

Access, including roads and trails leading to the area: Access to the area is by State Highway 65, FR 100, FR 181, and a small portion of FR 114. Roads leading into the area from these boundary roads include FRs 181-C, 181-A, and 100-A.

General description of the area geography: This area is very gently undulating and is poorly drained by a few permanent streams. The depth of underlying bedrock of limestone and various layers of Miocene clastics and Pleistocene sands result in an impermeable strata, which creates the swampy lowlands. There are several irregular-shaped, shallow depressions, which represent the undulations of the former Pleistocene sea bottom.

General description of the area topography: The area is flat, composed of pine flatwoods and wetland swamps. Elevations range from 30 to 50 feet. The area is mostly swampland.

General description of the area vegetation, including the ecosystem types: The dominant overstory vegetation is slash pine, with some longleaf pine. Titi is the predominant understory species, followed by gallberry and palmetto. There are some examples of the longleaf pine-wiregrass ecosystem on the higher elevations. More than half the area (4,963 acres) is in unsuitable land classes. This includes 2,291 acres of titi and 126 acres of savannahs, as well as 1,079 acres of bottomland swamps. Of the suitable acres, 548 acres are in the 0-10 year age class, and 676 acres are in the 11-20 year age class, accounting for nearly a third of the suitable acres. There are 443 acres in the 21-50 year age class, and 1,777 in the 51-60+ year age class.

Key attractions, including sensitive wildlife and scenic landmarks: State Highway 65, forming the western boundary, is part of the Apalachee Savannahs Scenic Byway. This allows the public several opportunities to view and experience this unique ecosystem.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Recent human activities are noticeable. Evidence of past turpentining operations can still be seen. There are several areas of recent timber harvesting and a few areas, especially along State Highway 65, presently marked for sale. In addition, a railroad runs parallel to State Highway 65 along the western side of the area. This railroad could have an effect on the flow of surface groundwater, but to date there is no evidence that this has happened. Old woods roads leading into the area are not maintained but are still evident due to heavy use from hunting and baiting.

To what degree is the area natural or natural appearing and free from disturbance? The area shows obvious signs

of forest management activities—such as clearcuts, site-prep burns, other prescribed burns, plantations, marked timber sales, and logging roads. Parts of the interior that are in swampland are still undisturbed and appear very natural.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? Human activities have kept the land in an altered condition. Past management strategies of emphasizing timber harvest have altered the natural appearance of the land, except interior swamp areas.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes, except a small area of private land in the northern tip. This private land could be excluded from the area.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: There are several old logging roads off of FR 181 and FR 100, as well as FR 181-C, 181-A, and 100-A. Timber harvesting activities are still evident. Several areas can be seen from State Highway 65. Recent clearcuts exist in Compartments 66, 78, and 79. There are 548 acres (suitable acres) of pine plantations in the 0-10 year age class in Compartments 66, 78, and 79 and 2,704 acres (unsuitable acres) of slash, titi, and savannah.

Cultural treatments involving plantations or plantings: In the past few years, site-prep burns have been done in several compartments before the plantations were planted.

Private inholdings in the area: At the northern tip of the area, where State Highway 65 meets FR 100, there are approximately 110 acres of private land owned by St. Joseph Land and Development Company.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: There is a special-use permit for rights-of-way along power lines, State Highway 65, and the railroad.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are 12 system roads. The area has 13.1 miles of roads, which exceeds the maximum roadless criteria (4.2 miles).

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Bee apiary special-use permits can be easily terminated. However, it would be difficult to terminate or mitigate special-use permits for rights-of-way for State Highway 65 or the railroad.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old woods roads are slowly being affected by the forces of nature. Use during hunting season keeps the roads drivable, but if they were not used they would become muted or completely disappear in a short period.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? Few opportunities exist for solitude and serenity. The presence of State Highway 65 and a railroad parallel to it contribute to the sights and sounds of civilization.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The area offers little opportunity for adventure, excitement, or challenge. Access is easy due to roads on all boundaries and system roads within the area.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - There are opportunities for hunting, the primary recreational activity.

Fishing - Black Creek and several intermittent streams offer moderate fishing opportunities.

Canoeing - Black Creek offers some canoeing opportunities, usually confined to the wetter times of the year.

Boating - None.

Backpacking - Old woods roads provide limited opportunities for backpacking.

Hiking - Old woods roads offer limited hiking opportunities.

Riding - Horseback riding opportunities exist on old woods roads.

Photography - Many opportunities exist for photography and nature study.

Special Features: Apalachee Savannahs Scenic Byway borders the area.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? Area has the capability to provide informal outdoor education, but these opportunities are also available on other parts of the Apalachicola NF. Since the area has been frequently disturbed by harvesting activities, few opportunities exist for scientific study of large, undisturbed areas. Is there an abundant and varied wildlife population? Wildlife populations are typical of the general forested area of longleaf/slash pine.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - The area above FR 181-A is semiprimitive motorized; the area below it is semiprimitive nonmotorized.

VQO - Along State Highway 65 is Partial Retention; the rest of the area is Maximum Modification.

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No. The private land in the northern tip of the area is owned by St. Joseph Land and Development Company and has no public use.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes. All boundaries are roads.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Boundaries are roads, which offer several opportunities to enter the area.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. Noise from nearby highways and the railroad easily penetrates the area.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: The primary recreational activities are fishing, hiking, and hunting.

Information on Wildlife Species, Populations, and Management Needs:

Featured species - Harper's beauty.

Management Indicator Species - RCW.

Water Availability and Use: There are several intermittent and small perennial streams in the area.

Livestock Operations: None.

Timber: Recently harvested areas are off of FR 100-C and FR 181-C. Several areas recently marked for sale are along State Highway 65. Several recently planted areas are pine reclamation stands (Compartments 66 and 78).

Minerals: None.

Cultural Resources: Bon Ami, a historic railroad town, is located in Sections 24 and 19. This is also a prehistoric site. There are four prehistoric sites in Sections 29, 30, 31, and 32. Another historic and prehistoric site is in Section 3. A dump for a turpentine camp is in Section 7.

Authorized and Potential Land Uses: Power line and railroad rights-of-way are along State Highway 65, both under special-use permit.
Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: There is a 3-4 year fuel buildup in the area. The area is periodically prescribed burned on a 3-4 year cycle. Areas of insect and disease infestations are salvaged and harvested.

What outputs are currently produced or could be produced in the future? Timber and dispersed recreation activities such as primitive camping, fishing, hiking, and hunting.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? Yes, by special-use permit for power line and railroad rights-of-way.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Part of the area is adjacent the Mud Swamp/New River Wilderness to the east.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Mud Swamp/New River Wilderness receives about 2.0 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? Population of the surrounding county is stable.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? There are 11 sensitive plant species and 1 sensitive species of snake (mole snake) in this area. An endangered plant, Harper's beauty is known to occur in this area, as well as the sensitive gopher tortoise.

Could these needs be provided for through means other than wilderness designation? Yes, through administrative designations such as special interest areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Buck Lake Roadless Area

I. DESCRIPTION

Acres: 5,680

Location and vicinity: Buck Lake is in the south central portion of the Seminole RD, Ocala NF, Marion County, Florida. It is bordered on the north by FR 595-1 and the Pinecastle Bombing Range, on the west by FR 566, on the south by FR 573, and on the east by FR 550 and FR 562. It is in T16S and R26E.

Access, including roads and trails leading to the area: Access to the north end is by FR 595-E, FR 595-l, and the Florida National Scenic Trail, on the west by FR 566, on the south by FR 573, FR 573-G, and the Flatwoods Horse Trail, and on the east by FR 509, FR 562-2, and several horse trails.

General description of the area geography: Geography consists of high dunelike ridges interspersed with lakes, ponds, and prairies. Dissolution of limestone and the collapse of overlying sandy strata have resulted in an undulating surface without a well-defined drainage system. Many lakes and shallow ponds are the result of dissolution of underlying limestone. No streams exist, and the area is drained through the porous sand into underground aquifers.

General description of the area topography: Most of the area is gently sloping, with elevations ranging from 50 to 150 feet. More than 90 percent of the area is sand pine.

General description of the area vegetation, including the ecosystem types: The area consists mostly of the sand pine-scrub oak ecosystem. There are scattered small ponds, and prairies are rare. Sand pine has been heavily cut. There are two timber sales planned in the area. Age classes range from 0 to 50+ years old.

Key attractions, including sensitive wildlife and scenic landmarks: This area supports threatened Florida scrub-jays. Sensitive wildlife includes Florida black bears and gopher tortoises. Some sensitive plants may be present.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Past and present human activities include the Flatwoods Horse Trail, plus several other marked horse trails; the FNST; habitat management for protected, endangered, threatened, or sensitive; prescribed burning; replanting; road construction and maintenance; site preparation; and timber harvesting. While these activities have affected natural processes, emphasis on recreation (hiking, horseback riding, and hunting) has helped maintain natural conditions.

To what degree is the area natural or natural appearing and free from disturbance? Evidence of forest management activities (recently harvested areas, marked timber sales, and road building) detracts from the area's naturalness, and few areas appear to be free from disturbance. Along the horse trails on the east side, there are some areas where harvesting has been done in the past, but the natural regeneration in the area contributes to naturalness and beauty.
If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? In areas of past forest management activities, natural regeneration is restoring a natural, untrammeled appearance. Most of the area appears manipulated by humans and has not regained a natural appearance.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? No. This public domain land is open to mining claims. There are outstanding prospecting mining claims on Buck Lake.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old (do not include areas of significant current mineral activity): None.
Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: Several compartments have been recently harvested and are very evident. More than 30 percent of the area is in the 0-20 age class, and these areas show obvious evidence of harvesting and planting. Currently, three compartments are under timber sale contracts. There are several logging roads and skid trails in the harvested areas. Also, level D roads are found throughout the area.

Cultural treatments involving plantations or plantings: Site preparation and

reforestation activities have occurred and are planned in the future.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: None.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are several level D roads throughout the area that are heavily used. The area has 6.53 miles of roads, which exceeds the criteria of .5 mile per 1,000 acres.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? The Flatwoods Horse Trail and FNST can be removed and all level D roads used by off-highway vehicles can be closed, although there would be strong public opposition to removing any trails and closing more roads.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old roads in the area are kept open by extensive hunting in the area and are not disappearing. Areas of previous plantings are thinned and thus retain evidence of humans. Wildlife habitat manipulation for threatened Florida scrub-jay overrules natural processes due to specific habitat needs.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? Due to the high use of the area for hunting and motorized access to all parts of the area, there is very little opportunity to experience solitude and serenity.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? Access is easy due to the roads bounding the area, several roads inside the area, and several old logging roads that are maintained as horse trails. The Flatwoods Horse Trail and FNST traverse the area. There is opportunity for elements of discovery and self-reliance, mostly associated with the horse trails. However on the whole, the area does not offer many opportunities for adventure, excitement, or challenge.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - Hunting is allowed.

Fishing - Fishing opportunities are limited, mostly in small ponds.

Canoeing - None.

Boating - None.

River Rafting - None.

Backpacking - There are opportunities for backpacking on old logging roads, horse trails, and the FNST.

Hiking - Hiking opportunities are available along the old logging roads, horse trails, and the FNST.

Riding - There are abundant opportunities for horseback riding, with several trails in the area on old logging roads. Flatwoods Horse Trail is a designated horse trail.

Photography - There are good opportunities for photography and natural study.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area has the capability to provide informal outdoor education, but these opportunities also are available on other parts of the Seminole RD. The area has been frequently disturbed by harvesting and road-building activities. Few opportunities exist for scientific study of large, undisturbed areas.

Is there an abundant and varied wildlife population? Wildlife populations are typical of the general forested area of sand pine-scrub oak ecosystems.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Roaded Natural

VQO - Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes. All boundaries are roads.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Roads make easy access points into the area.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. Noise from nearby forest roads and State Highway 19 penetrates the area.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: The primary recreational activities are hiking, horseback riding, and hunting. Other activities include low levels of primitive camping, fishing, and gathering forest products.

Information on Wildlife Species, Populations, and Management Needs: Wildlife includes most of the sensitive/threatened species known to exist in this ecosystem. The threatened Florida scrub-jay needs active management to assure its long-term viability.

Water Availability and Use: There are a few small ponds.

Livestock Operations: None.

Timber: Harvesting operations occur in the sand pine.

Minerals: None.

Cultural Resources: None within harvested areas.

Authorized and Potential Land Uses: Mining.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: The only prescribed fire used in this area is site-preparation burning. Salvage of timber would occur during a major insect or disease outbreak. There are no private inholdings.

What outputs are currently produced or could be produced in the future? Timber, hunting, and dispersed recreation activities.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? Yes, habitat management for the threatened Florida scrub-jay.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? Yes, wood products.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? There are outstanding prospecting mining claims in Sections 22, 23, 26, and 27. There are also two areas (about 700 acres of clearcuts) under Timber Sale Contracts that have not been harvested.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Billies Bay Wilderness is about 3 miles to the east and Alexander Springs Wilderness is about 5 miles farther east.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Billies Bay Wilderness and Alexander Springs Wilderness receive a combined total of 3.6 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of Florida is increasing at a rate of 800-1,000 people per day. Central Florida receives about 60 percent of that amount.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Dispersed recreation opportunities are available on similar primitive areas on the Ocala National Forest.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? Florida black bear.

Could these needs be provided for through means other than wilderness designation? Yes, through administrative designations such as special management areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Clear Lake WSA Roadless Area

I. DESCRIPTION

Acres: 5,635

Location and vicinity: Clear Lake is in the northeast portion of the Wakulla RD, Apalachicola NF, Leon County, Florida, about 10 miles southwest of Tallahassee. The area is bound on the north by FR 305, on the west by FR 367 and FR 383, on the south by State Highway 267, and on the east by FR 307 and FR 305.

Access, including roads and trails leading to the area: Access into the area is by Forest Roads 305, 367, 383, and 307 and by State Highway 267.

General description of the area geography: This area is characterized by limestone bedrock, which is close to the surface and overlain by sandy and alluvial loamy soils. The shallow depth to the bedrock results in areas where the limestone has been dissolved by acidic rain, creating a gently-undulating landscape. Clear Lake itself is a collapsed sinkhole.

General description of the area topography: Landscape is gently undulating, with elevations ranging from 50 to 120 feet. The interior of the area is upland ``islands,'' unusual for the Apalachicola NF, which are separated by swamps.

General description of the area vegetation, including the ecosystem types: The dominant vegetation is longleaf and slash pine, with an understory of palmetto, gallberry, and titi. This area contains several examples of upland pines, which are typical of higher elevations on the karst plain. In swamp areas, titi is the dominant vegetation. Most of the area has an average age class of 70 years.

Key attractions, including sensitive wildlife and scenic landmarks: Clear Lake is extremely scenic and an excellent example of a large sinkhole.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Past timber harvesting activities are evidenced by areas of younger trees planted during the early 1970s. There are 70 acres of longleaf pine and 10 acres of slash pine that are 20 years old or less. Another 31 acres of longleaf pine and 427 acres of slash pine are in the 21-30 age class. However, the area has been managed as wilderness since its designation as a roadless area during the early 1970s and as a wilderness study area in 1983. Some old woods roads and user-created roads are still used by hunters, but some of these old roads are slowly becoming overtaken with natural vegetation. There is a borrow pit—used as fill in the construction of the highway and for stabilizing various Forest Service roads in the surrounding area—along State Highway 267. The suppression of wildfire and absence of prescribed fire since 1983 has altered species composition.

To what degree is the area natural or natural appearing and free from disturbance? Other than a few old woods roads still used by recreationists, there is little evidence of human activity. The area appears free from disturbance.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? Past management activities of

harvesting and planting are slowly becoming muted and the land is regaining a natural, untrammeled appearance.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

> Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: There are two areas of regeneration cutting since 1973 off of FR 305, with a combined acreage of 80 acres. Timber harvest activities in these areas are slightly evident.

Cultural treatments involving plantations or plantings: None.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: The borrow pit on State Highway 267 is a nonconforming improvement. There is also a bee apiary off of FR 307.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are no system roads.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? The special-use permit for the bee apiary could be terminated. It would be very difficult to mitigate the borrow pit or to terminate the special-use permit for the right-of-way along State Highway 267. The borrow pit could be excluded from the area, or the edges could be reshaped to appear more natural or allowed to recover naturally.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old logging roads are gradually returning to a natural appearance. Wildfire has acted as a natural force, which maintains ecological conditions.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these

characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? The area has opportunities for solitude, for serenity, and to escape the sights and sounds of civilization. There are some noise impacts from military overflights, from the rifle range on the north side of FR 305 and from State Highway 267 on the south. In the interior swamp area the visitor can quickly become isolated from the impacts of civilization.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? Opportunities to experience adventure, excitement, and challenge are similar to those for other large, undisturbed areas. Access is easy due to the roads that bound the area.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - Opportunities for primitive camping are available.

Hunting - There are opportunities for hunting large and small game. Hunting is a primary recreational activity in the area.

Fishing - Clear Lake offers excellent opportunities for fishing.

Canoeing - Clear Lake offers limited opportunities for canoeing.

Boating - Small horsepower motorboats are currently used on Clear Lake.

Backpacking - Old woods roads in the area offer opportunities for backpacking.

Hiking - Old woods roads offer opportunities for hiking.

Riding - Old woods roads are suitable for horseback riding.

Photography - The area offers outstanding opportunities for photography and nature study.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? There are excellent opportunities for informal outdoor education, as well as informal and formal scientific studies. The area's proximity to an urban area makes it easily accessible.

Is there an abundant and varied wildlife population? Yes. Wildlife populations are typical of those found in large, undisturbed areas of pine uplands. There are nine active and three inactive RCW clusters. Gopher tortoises and Florida pine snakes also occur in the area.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Semiprimitive Motorized

VQO - Retention and Partial Retention

Present and Planned Uses - The area is currently a wilderness study area.

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes. All boundaries are roads.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Boundaries are roads, allowing easy access to prohibited uses such as motorized vehicles.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. Noise from nearby State Highway 267 easily penetrates the area, as well as noise from surrounding forest roads, which are the boundaries. However, once the visitor is out of earshot from the roads, the sights and sounds of civilization are excluded by the level terrain and thick vegetation.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes. All boundaries are roads.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: Recreational activities are primitive camping, fishing, hiking, hunting, and off-highway vehicle use.

Information on Wildlife Species, Populations, and Management Needs: The Featured Species is turkey. There are many RCW clusters. These clusters help the district meet goals of the Interagency Recovery Plan.

Water Availability and Use: Clear Lake is a permanent lake, formed by a sinkhole. There are also several small intermittent streams in the area.

Livestock Operations: None.

Timber: There has been no timber harvesting since 1973.

Minerals: None.

Cultural Resources: A cultural resources survey has not been conducted for the area. However, there is a moderate probability of finding sites on the south side and next to Clear Lake itself and a good probability of finding sites around the perimeter of the area on the drier soils. There is a site (an old turpentining camp) outside the wilderness study area on the north side of FR 305 in Section 25. Although a survey has not been done in the wilderness study area, this site probably extends into the area.

Authorized and Potential Land Uses: There are special-use permits for a bee apiary and for a power line right-of-way on State Highway 267.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: Due to a policy of fire suppression in the wilderness study area, there is a 14-year fuel buildup. Salvage harvesting of insect and disease infestations is permitted.

What outputs are currently produced or could be produced in the future? Dispersed recreation activities such as camping, fishing, honey products, hiking, hunting, and RCW habitat.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? The area contains some stands in the 70+ year age class, which offer excellent opportunities for nature/education/studies of old-growth ecosystems. There are several acres of the longleaf pine-wiregrass ecosystem. These, along with the upland pine type, represent unique ecosystems in the area.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? No. However, the special-use permit for the right-of-way along State Highway 267 would be difficult to terminate. The special-use permit for the bee apiary could be terminated.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Bradwell Bay Wilderness is 10 miles to the southwest. St. Marks National Wildlife Refuge Wilderness area is 20 miles to the south.

What level of use currently exists in nearby existing wilderness? What trends exist

in the use of these areas? Bradwell Bay Wilderness receives 2.2 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of Florida is increasing at a rate of 800-1,000 people per day. The Tallahassee area receives about 10 percent of that increase.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? There are many areas on the national forest with similar opportunities for dispersed recreation. Bradwell Bay Wilderness offers excellent primitive recreation opportunities.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? Yes. There are several RCW clusters. Florida black bears and indigo snakes also occur in the area.

Could these needs be provided for through means other than wilderness designation? Yes, through administrative classification as a special interest area or other special management area.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Farles Prairie Roadless Area

I. DESCRIPTION

Acres: 2,467

Location and vicinity: Farles Prairie is in the central portion of the Seminole RD, Ocala NF, Marion County, Florida. It is about 16 miles north of Umatilla, Florida. It is bordered on the south by FR 595-2, on the west by the compartment line of Compartment 243, on the north by FR 599, and on the east by FR 562-l. It is located at T16S and R26E.

Access, including roads and trails leading to the area: Access is by FR 599-A, FR 599-1, and FR 595-2. Farles Prairie Campground has access from FR 595-1 to the FNST.

General description of the area geography: The geography consists of low dunelike ridges interspersed with lakes, ponds, and prairies. Dissolution of limestone and the collapse of overlying sandy strata have resulted in an undulating surface without a well-defined drainage system. Many lakes and shallow ponds are the result of dissolution of underlying limestone. Few well-defined streams exist, and this area is drained principally through the porous sand into underground waterways.

General description of the area topography: Most of the area is gently sloping with elevations ranging from 50 to 100 feet. The western half of the area is prairie, and the eastern half contains both prairie and pine ecosystems.

General description of the area vegetation, including the ecosystem types: The western half of the area is

prairie, which contains tall grasses and cattails, including sand cord grass, yellow-eyed grass, and chalky bluestem. The eastern half is mostly sand pine with some slash pine. Sand pine understory is mainly scrub oak and garberium. The slash pine understory is predominantly palmetto. Age classes range from 0 to 60 years old.

Key attractions, including sensitive wildlife and scenic landmarks: Farles Prairie ecosystem supports a variety of waterfowl and wildlife. Sensitive wildlife includes American ospreys, gopher tortoises, sandhill cranes, and Florida black bears. Endangered wildlife includes wood storks. Sensitive plants include St. John's wort, bog buttons, and a variety of sundew.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Past human activities include timber harvesting until the 1990s, some road construction for logging activities, and recreational use. Present activities mainly include recreational use, although some harvesting does occur. In 1992, a regional Rainbow Family gathering was held in the area with about 2,000 people attending. Human activities do not appear to affect the natural ecological processes.

To what degree is the area natural or natural appearing and free from disturbance? The area appears to be in a natural state, especially the prairie. There is evidence of forest management activity in the pinelands.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? The overall appearance of the prairie is natural and untrammeled.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes. However, the land is public domain, thus open to claim-staking.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features, or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: Farles Prairie Campground is a designated hunt camp during hunting season. There is a boat access point at Farles Prairie Campground. A 3-mile stretch of the FNST goes through the western half of the area. There is a boat ramp at the end of FR 599-A.

Timber harvest areas where logging and prior road construction are or are not evident: Dispersed along the edges of the prairie.

Cultural treatments involving plantations or plantings: Normal reforestation practices in areas harvested.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: There are two concrete boat ramps on FR 599-A and FR 595. Unexploded ordnance has been found in the area because of an adjacent bombing range.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There is a half-mile of a level B road, FR 599-A, leading to Ocala Pond. There is a road closed to public use along the western edge of the prairie.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? The boat access point could be rehabilitated and allowed to deteriorate naturally. It would be difficult to removed the campground.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Harvested areas from the 1970s to the 1990s are slowly being muted by the forces of nature. This has been a vehicle-restricted area since the 1970s and roads are slowly becoming overgrown.

III. EVALUATION

Capability

Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? Many opportunities exist for solitude and serenity. Hikers on the FNST encounter other hikers. Distractions to solitude are military overflights, an active bombing range, and State Highway 19 about 2 miles to the east.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? Access is easy due to the campground, the FNST, and roads on the north, east, and south. Opportunities to experience adventure or use initiative are similar to those for other small, undisturbed areas in the eastern United States. The trailless openness of the prairie provides elements of challenge and self-reliance.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - Hunting is allowed, with opportunities for small and large game.

Fishing - Good opportunities exist for fishing largemouth bass and bream.

Canoeing - Farles Lake offers limited opportunities for canoeing and kayaking.

Boating - Motorboats with under 20-horsepower motors are permitted on Farles Lake.

River Rafting - None.

Backpacking - The FNST offers limited opportunities for backpacking.

Hiking - The FNST and old logging roads provide opportunities for hiking.

Riding - There are opportunities for horseback riding on old logging roads.
Photography - There are abundant opportunities for photography and nature study.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area is capable of providing informal outdoor education and scientific study, especially on water-related wildlife, water cycles, successional processes in wetlands, and archeological research.

Is there an abundant and varied wildlife population? Wildlife population is similar to other undisturbed areas in central Florida that are typical of the sand pine and prairie ecosystem. Wildlife includes Florida black bears, gopher tortoises, raccoons, sandhill cranes, wood storks, plus many others.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Semiprimitive Nonmotorized

VQO - Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? The western boundary (the compartment line) would be difficult to establish and recognize on the ground. Other boundaries are roads that are easily identifiable.
Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. There are opportunities for motorized access from the boundary roads. The western boundary would not be controllable.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. Military overflights, the bombing range, State Highway 19, and Farles Prairie Campground create the sights and sounds of civilization.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes. FR 599-1, 562-1, and 595-2 provide access, as well as the FNST trailhead.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: Recreational activities are boating, primitive and vehicle camping, canoeing, fishing, hiking, hunting, kayaking, and photography.

Information on Wildlife Species, Populations, and Management Needs: Typical species for sand pine and prairie ecosystems.

Water Availability and Use: Farles Lake and several small ponds are present year-round. There are no streams.

Livestock Operations: None.

Timber: Harvesting operations occur in the sand pine and slash pine areas.

Minerals: None.
Cultural Resources: There is at least one known site with its significance undetermined. The probability is medium to high that other sites exist near the prairie.

Authorized and Potential Land Uses: One power line exists along FR 595.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: Fire cycle is from 3 to 5 years. The area is prescribed burned periodically. Salvage operations may occur in the case of insect or disease infestations.

What outputs are currently produced or could be produced in the future? Timber, game, and dispersed recreation activities.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? Prescribed burning is necessary to maintain the habitat of the threatened scrub-jay and wilderness designation. Without the benefit of prescribed fire, scrub-jay habitat, and flora of the prairie ecosystem would be restricted.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.
Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? Yes, wood products.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? Not at present. Timber sale contract within the area was closed in FY 92.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Billies Bay Wilderness is

more than 3 miles to the east. Alexander Springs Wilderness is about 7 miles farther east. Juniper Prairie is 3 miles to the north.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Billies Bay and Alexander Springs receive a combined total of 3.6 MRVDs per year. Juniper Prairie Wilderness receives 18 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of Florida is increasing at the rate of 800-1,000 people per day. Central Florida is receiving about 60 percent of this increase.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? There are many areas on the Ocala NF that offer similar dispersed recreation activities.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? Yes, sandhill crane and Florida black bear.

Could these needs be provided for through means other than wilderness designation? Yes, through designations of special management areas, special interest areas, watershed management areas, or semiprimitive nonmotorized ROS classifications.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Gum Bay Roadless Area

I. DESCRIPTION

Acres: 9,180

Location and vicinity: This area is in the western central portion of the Apalachicola Ranger District, Apalachicola NF, Liberty County, Florida. Map coordinates are T4S, R5W and T5S, R5W. The area is bound on the north by FR 119, on the east by section lines of Sections 26 and 35, on the south by FR 125, and on the west by FR 126.

Access, including roads and trails leading to the area: Access is by Forest Roads 119, 125, and 126.

General description of the area geography: This area is very gently undulating and is poorly drained by a few permanent streams. The depth of the underlying bedrock of limestone and the various layers of Miocene clastics and Pleistocene sands result in an impermeable strata, creating the swampy lowlands. There are several irregular-shaped, shallow depressions that represent the undulations of the former Pleistocene sea bottom.

General description of the area topography: The area appears flat, composed of pine flatwoods and wetland swamps. Elevations range from 30 to 50

feet. A large part of the interior of the area is swamp.

General description of the area vegetation, including the ecosystem types: Slash pine makes up the dominant overstory vegetation in the forested areas. The slash pine understory is predominantly palmetto, with some gallberry and titi. The slash pine has been steadily cut during the last 30 years, with 801 acres in the 0-20 year age class and 914 acres in the 21-30 year age class. In the unsuitable land-class acres, there are 8,003 acres of savannah, and 1,432 acres of slash pine, longleaf pine, and upland and bottomland hardwoods in the 51-60+ year age class. Much of the interior area is in bottomland hardwood swamps, with pine flatwoods on the perimeter.

Key attractions, including sensitive wildlife and scenic landmarks: None.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Recently harvested areas are still obvious along FR 119. Several logging roads are still present and are used by hunters and baiters.

To what degree is the area natural or natural appearing and free from disturbance? The interior, mostly swamp, appears natural and free from disturbance. On the perimeter, the pine flatwoods have been disturbed due to timber harvesting activities and associated roads.
If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? Old harvest areas and woods roads are slowly regaining a natural appearance, although many areas are obviously plantations. Current reforestations efforts in clearcut areas give the forest a ``managed'' appearance due to previous emphasis on timber harvesting.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: Harvested areas along FR 119 (totaling 28 acres) are still very evident, as well as roads into the harvested areas.
Cultural treatments involving plantations or plantings: Plantations along FR 119 were site prepped by prescribed burning.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: There is a bee apiary off of FR 125.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: FR 164 cuts across the bottom portion of the area. There are two other system roads, FR 125-E and FR 119-D. The area has 5.5 miles of roads, which exceeds the maximum roadless criteria (4.6 miles).

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Yes, special-use permits can be terminated.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Yes. There are few improvements in the area, old logging roads that are slowly disappearing over time.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? The interior offers some opportunities for solitude and serenity. The swampy interior allows the visitor to become isolated from the sights and sounds of civilization.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The interior offers opportunities for adventure, excitement, and challenge due to the difficulty of the swampy terrain and lack of old woods roads. Access into the area is easy due to the roads forming the boundary of the area.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - There are opportunities for hunting, the primary recreational activity.

Fishing - There are few opportunities for fishing in Gum Bay. Juniper Creek flows through the western side of the area but offers limited fishing.

Canoeing - There is little or no opportunity for canoeing on Juniper Creek. It is not navigable in this area.

Boating - None.

Backpacking - There are some opportunities for backpacking on old woods roads.

Hiking - Old woods roads offer some hiking opportunities.

Riding - Old woods roads offer opportunities for horseback riding.
Photography - Good opportunities exist for photography and nature study.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area offers some opportunities for informal outdoor education and for both formal and informal scientific study. These opportunities are limited due to the lack of old roads and trails into the interior.

Is there an abundant and varied wildlife population? Wildlife populations are typical of the general forested slash pine/longleaf pine areas.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Semiprimitive Nonmotorized

VQO - Maximum Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? No. Most boundaries are roads. However, the east boundary is a section line, which would not be recognizable on the ground.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. The area is bound on three sides by roads that allow easy access.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. However, this area is used very little, except for hunting and forest management activities. The interior does have opportunities to become isolated from the sights and sounds of civilization.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: The primary recreational uses are baiting, fishing, hiking, and hunting.

Information on Wildlife Species, Populations, and Management Needs:

Management Indicator Species - RCW and Florida black bear.

Water Availability and Use: Juniper Creek and several small intermittent streams go through the area.

Livestock Operations: None.

Timber: There are recently harvested areas with a combined acreage of 28 acres.

Minerals: None.

Cultural Resources: No surveys have been done in this area. However, there is a low probability of sites.

Authorized and Potential Land Uses: There is a power line along FR 164.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: There is a 3-4 year fuel buildup in the area. Periodically prescribed burning is on a 3-4 year cycle. Areas of insect and disease infestations are salvaged and harvested.

What outputs are currently produced or could be produced in the future? Timber and dispersed recreation activities such as hunting, baiting, hiking, and primitive camping.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? This area contributes significantly to meeting timber harvesting objectives. There are also several RCW clusters in the area.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? There is a special-use permit for the power line on FR 164.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Mud Swamp/New River Wilderness is about 5 miles to the west.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Mud Swamp/ New River Wilderness receives about 2.0 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of the surrounding county is stable but may be declining very slowly.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? Yes, there are RCW clusters.

Could these needs be provided for through means other than wilderness designation?

Yes, through administrative designations such as special interest areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No

Impassable Bay Roadless Area

I. DESCRIPTION

Acres: 5,760

Location and vicinity: Impassable Bay is in the northwestern portion of the Osceola NF, in Columbia and Baker Counties, Florida. It is on the northern boundary of the forest, about 20 miles from Lake City. Map coordinates are T1S, R18E. The area is bound on the north by the forest boundary. The eastern boundary is formed partly by a section line and by FR 212 and FR 272. The southern boundary is formed by FR 232 and FR 262. The western boundary is FR 234 up to FR 272, then up FR 237 and FR 237-A to the forest boundary.

Access, including roads and trails leading to the area: Access is by Forest Roads 234-B, 234-G, 234-07, 234-08, 234-09, 234-10, 262-B, 262-C, 262-12, 272-A, 272-C, and 273-03. There are several roads, old logging roads, and trails leading into the area. Roads form most of the boundaries and provide access.

General description of the area geography: The Osceola NF is comprised of areas averaging 100 feet above mean sea level, with a series of marine terraces formed by seas in the early Pleistocene age. Soils were formed from these terraces' deposits and are wet or waterlogged sandy floodplains or swamps, with a 20-40-inch sand cap overlying fine sandy clay loam or fine sandy loam.

General description of the area topography: Impassable Bay appears flat, with low ridges interspersed with swamps and intermittent creeks. Elevations range from 125 to 150 feet. Sand and clay soils, terraced by early Pleistocene seas, give the land a typically concave or depressional topography.

General description of the area vegetation, including the ecosystem types: Fetterbush swamps make up most of the bay, characterized by 5-10 foot high shrubs in clumps with scattered, stunted slash pine and pond pine. Periodic wildfires and a high water table keep the vegetation from developing an overstory. Other trees scattered throughout the fetterbush are cypress, sweet bay, and red bay. Ground vegetation consists of sedge, moss, greenbrier, and two species of pitcher plant. Age classes for the pine trees range from 0 to 70+ years.

Key attractions, including sensitive wildlife and scenic landmarks: The large expanse of Impassable Bay itself is a unique ecological area, almost inaccessible due to the dense fetterbush and other understory species. Wildlife may include sensitive Florida black bears, endangered wood storks, and sensitive sandhill cranes during late fall and winter, Carpenter frogs, round-tailed muskrats, and several wading birds—such as great blue herons, little blue herons, anhingas, great egrets, white ibis, snowy egrets, and tri-colored herons. There is a documented wading bird colony in the area.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? This

area, except the bay itself, has been in timber management since the 1930s. Before Federal ownership, the forested areas were cutover. After acquiring the land, the Forest Service replanted some area in pine. In recent years, the area south of the bay has been partly logged and planted in pine plantations. There are many old roads and logging trails. Several of the old woods roads are not maintained but are still evident due to use by hunters. The present-day Sandhill Hunt Camp was a turpentine camp during the 1930s and 1940s.

To what degree is the area natural or natural appearing and free from disturbance? The area north of FR 272, where the bay is impenetrable, is in its natural state. The rest of the area shows obvious evidence of forest management activities: logging, clearcuts, old roads, and marked timber sales.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? The area north of FR 272 is still in a natural state; ecological processes have not been disturbed or impacted. Below FR 272, human activities have kept the land in an altered state. The timber harvesting, turpentining in the past, old roads, and hunt camps have disturbed the natural processes and have prevented the land from regaining an untrammeled appearance. Firelines are also evident in the lower portion.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes, surface and subsurface Federal ownership assures perpetuation of those values requiring protection. The impenetrable nature of the bay perpetuates a true wilderness experience.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: A dispersed recreation site, Sandhill Hunt Camp, is located on FR 272.

Timber harvest areas where logging and prior road construction are or are not evident: There are several old logging roads off of FRs 272, 214, 262, and 237. Harvested areas can be seen from FRs 272 and 234. In addition, there are two old borrow pits used for construction of forest roads. One is at Sandhill Hunt Camp and the other off of FR 234 one mile north of FR 262. Only the borrow pit on FR 234 is actively being used. In the 0-10 year age class, Compartment 16 has 102 acres; Compartment 17 has 126 acres; Compartment 23 has 190 acres; Compartment 24 has 124 acres; and Compartment 25 has 191 acres. This is a total of 733 acres in this age class out of a

total acreage of 5,760 acres, or about 13 percent.

Cultural treatments involving plantations or plantings: Stands in this area that have been planted have all been burned, shreared, disked, or chopped and most have been bedded prior to planting.
Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: There are 5 bee apiaries in Sections 19, 26, 28, 32, and 36. On the northern boundary, the forest boundary, is an old fence. There are also several culverts, bridges, and roads.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are 6 system roads and 6 primitive roads. The area has 10 miles of roads, which exceeds the maximum roadless criteria (2.8 miles).

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Yes, special-use permits could be terminated for those activities within the area, such as bee apiaries. However, the heavily used Sandhill Hunt Camp would be difficult to remove because it is traditionally a favored spot by local hunters. There are 9 system roads that would be difficult to obliterate. Although they are not paved, it would be several years before their appearance became muted by natural forces.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old woods roads are slowly being affected by the forces of nature. Given time and the forces of nature, these old roads would be difficult to identify. However, use during hunting season keeps these roads in evidence. System roads are maintained.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? The area provides many opportunities for solitude and serenity, especially north of FR 272, where the bay is used infrequently because of difficult accessibility. Some frequently used roads, such as FR 262 and FR 272, and Sandhill Hunt Camp contribute noise and other evidence of humans, which would impact solitude. Overflights by military aircraft also impact solitude and serenity.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The area offers several opportunities for adventure, excitement, and challenge in the part of the bay north of FR 272. The ruggedness of the terrain, lack of identifiable landmarks, and dense

vegetation contribute to an experience of challenge, risk, and self-reliance. The only access into the northern part is by FRs 237, 237-A, 272-A, and an old woods road that forms the eastern boundary of the area. The southern part of the area, below FR 272, is crisscrossed with several old roads and trails making access easy. Thus, there are fewer opportunities to experience adventure, challenge, or excitement.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - There are opportunities for both small and large game hunting.

Fishing - Several small ponds and intermittent streams in the area offer good opportunities for fishing.

Canoeing - This area offers few opportunities for canoeing. There are some small ponds in the area but during most of the year they are inaccessible by canoe.

Boating - None.

River Rafting - None.

Backpacking - There are opportunities for backpacking along old woods roads and trails in the area.

Hiking - There are opportunities for hiking along old woods roads and trails in the area.

Riding - Old woods road, trails, and system roads provide opportunities for horseback riding in the area.

Photography - There are opportunities for photography and nature study.

Birding - There are opportunities for bird-watching.

Special Features: Impassable Bay itself is a large, remote swamp and an excellent example of the dense fetterbush swampland. Sandhill Hunt Camp is located on a site that is eligible for listing in the National Register of Historic Places.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area has the capability to provide informal outdoor education, but these opportunities are available on other parts of the Osceola National Forest. The bay represents an excellent example of a large expanse of fetterbush-dominated swamp that would provide opportunities for scientific study. There is potential for archeological research.

Is there an abundant and varied wildlife population? Wildlife populations are typical of the general forested area of longleaf and slash pine and the swampy areas of fetterbush, gallberry, and palmetto. The area has never been surveyed, although some areas have been surveyed for RCWs and inactive clusters have been located in Compartment 23. Carpenter frogs are found here. The area is also a breeding area for wading birds.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Roaded Natural

VQO - Maximum Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.
Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? No. Although several of the boundaries are system roads, the entire northern boundary is the forest boundary, sometimes not easily recognizable by forest visitors.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Several of the boundaries are roads, which offer many opportunities to enter the area. However, many areas are impenetrable without a machete.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? Since several of the boundaries are system roads, and many of these roads are inside the area, these boundaries do not shield the area from passing vehicles noise and other sights and sounds of civilization. However, thick vegetation blocks out much of the road noise, and the visitor experiences a strong sense of isolation and quiet. The northern boundary, which passes through the bay itself, offers better protection from these intrusions because the bay itself is impenetrable.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? The southern and western boundaries of the area offer good access and traveler transfer facilities. Since the northern and eastern boundaries are not system roads, they offer little access into the area.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: Dispersed recreation activities such as camping, fishing, hiking, and hunting are common. Sandhill Hunt Camp is a well-used, traditional hunt camp site.

Information on Wildlife Species, Populations, and Management Needs:

Featured Species - Florida black bear.

Water Availability and Use: There is an abundance of water. The bay itself is usually covered with a shallow layer of water. The headwater of Deep Creek, an Outstanding Florida Water, originates in the Impassable Bay drainage.

Livestock Operations: There is a current cattle grazing allotment for the area.

Timber: Five compartments have recent timber harvest areas, with a total of 733 acres.

Minerals: None.

Cultural Resources: Sandhill Hunt Camp in Sections 27 and 28 (T1S, R18E) is eligible for listing in the National Register of Historic Places. In the western portion, there are prehistoric sites along the headwater of Deep Creek in Sections 32 and 33. In addition, there is a prehistoric site along FR 214 in Sections 26 and 35.

Authorized and Potential Land Uses: There are six bee apiary site locations; all

are on adjacent system roads. The area is within the Big Gum range allotment.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: The area has been on a 3-5 year burn rotation since 1980. Areas of insect and disease infestations are salvaged and harvested.

Compartment	Years Burned
16	1990
17	1983, 88, 91
23	1980, 86, 89, 92
24	1983, 87
25	1980, 86, 88

What outputs are currently produced or could be produced in the future? Outputs include timber, camping, hunting, and dispersed recreation.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? This area contributes slightly to the district's timber targets. Harvesting is restricted in Compartment 23 because of inactive RCW clusters. Compartments 16, 17, and 24 are largely comprised of wetlands, with little pine flatwoods. Compartments 15 and 25, in contrast, have a larger percentage of pineland and are about average for the district as far as wetlands and flatwoods distribution. Under long-term RCW guidelines, this area will be part of the Osceola habitat management area.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? No.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Big Gum Swamp Wilderness is adjacent to the area.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Big Gum Swamp receives 2.0 MRVDs per year. The area is used primarily by hunters in the fall and winter; this trend has been consistent for many years. Hikers and bird-watchers also use Big Gum Swamp.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of the surrounding area, especially Lake City, is expanding rapidly and should continue to increase. The majority of hunters come from the city of

Jacksonville and Duval County; the population of both is increasing.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation and primitive experiences.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? Florida black bears, gopher tortoises, and red-cockaded woodpeckers exist in this area. There are two RCW single, inactive cavity trees in Section 28 of T1S, R18E. There is one inactive cluster in Section 32 of T1S, R18E. Although the Florida panther does not exist in the area, a reintroduction project has documented significant use of Impassable Bay and Big Gum Swamp by the experimental reintroduction of Texas cougars. It could be an important area for reintroduction of the Florida panther.

Could these needs be provided for through means other than wilderness designation? Yes, through administrative designations such as special interest areas or wildlife management areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? Yes, breeding areas for wading birds are extremely important. Areas inaccessible to humans are vital to the survival of species like the Florida panther or the Florida black bear.

Long Bay Roadless Area

I. DESCRIPTION

Acres: 8,084

Location and vicinity: This area is in the western central portion of the Apalachicola RD Apalachicola NF, Liberty County, Florida. Map coordinates are T4S, R5W. The area is bound on the north by FH 13, on the east by State Highway 67, on the south by FR 119, and on the west by FR 126.

Access, including roads and trails leading to the area: Access is by FH 13, FR 126, FR 119, FR 137-A, and State Highway 67.

General description of the area geography: This area is very gently undulating and is poorly drained by a few permanent streams. The depth of the underlying bedrock of limestone and various layers of Miocene clastics and Pleistocene sands result in an impermeable strata, which creates the swampy lowlands. There are several irregular-shaped, shallow depressions

that represent the undulations of the former Pleistocene sea bottom.

General description of the area topography: The area appears flat, composed of pine flatwoods and wetland swamps. Elevations range from 30 to 50 feet. A large part of the interior of the area is swamp.

General description of the area vegetation, including the ecosystem types: Slash and longleaf pine make up the dominant overstory vegetation in the forested areas. The slash pine understory is predominantly palmetto, with some gallberry and titi. Most of the unsuitable land-class acres are in titi. Of the 2,684 suitable land-class acres, 1,246 are in the 0-20 year age class, indicating the slash pine has been heavily cut. There are 1,070 acres in the 51-60+ year age class in suitable acres and 794 acres of unsuitable in this age class. About half of the area is swamp, mostly in the interior, with pine flatwoods on the perimeter.

Key attractions, including sensitive wildlife and scenic landmarks: None.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Recent clearcuts are still obvious along FR 126 and FR 119. There is an area along State Highway 67 that is currently marked for sale. Several logging roads into the area are still present and are used by hunters and baiters.

To what degree is the area natural or natural appearing and free from disturbance? The interior is mostly swamp and appears natural and free from disturbance. Pine flatwoods on the perimeter have been disturbed due to timber harvesting activities and associated roads.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? Old harvest areas and logging roads are slowly regaining a natural appearance, although many areas are obviously plantations. Current reforestation efforts in clearcut areas give the forest a managed appearance due to previous emphases on timber harvesting.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features, or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: Harvesting along FR 126 (totaling 88 acres) and along FR 119 (totaling 75 acres) is still very evident. Old woods roads and firelines are still very evident.

Cultural treatments involving plantations or plantings: Recently harvested areas along FR 126 and FR 119 have been site prepped by prescribed burning. These areas were planted in 1992.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: There is a bee apiary in the area.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are 9 system roads. The area has 6.7 miles of roads, which exceeds the maximum roadless criteria (4 miles). Most of these roads are primitive.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Yes, except for the special-use permit for the right-of-way along State Highway 67.
Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Yes, there are a few improvements, which are old logging roads that are slowly disappearing over time.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? The interior offers some opportunities for solitude and serenity. The swampland interior allows the visitor to become isolated from the sights and sounds of civilization.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The area offers some opportunities for adventure, excitement, and challenge in the interior swamp. Access is easy due to the roads forming the boundary of the area.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - There are opportunities for hunting, the primary recreational activity.

Fishing - Opportunities for fishing are limited. Juniper Creek flows through the southwestern corner but offers limited fishing.

Canoeing - There are no canoeing opportunities on Juniper Creek; it is not navigable in this area.

Boating - None.

Backpacking - There are opportunities for backpacking on old woods roads.

Hiking - Old woods roads offer some hiking opportunities.

Riding - Old woods roads offer some opportunities for horseback riding.

Photography - The area offers opportunities for photography and nature study.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? Some

opportunities exist for informal outdoor education and for informal and formal scientific study. Potential for archeological research is limited.

Is there an abundant and varied wildlife population? Wildlife populations are typical of the general forested slash/longleaf pine areas.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Roaded Natural

VQO - Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes, boundaries on all sides are roads.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Area boundaries are roads, which allow easy access into the area.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. However, this is a little-used area of the forest, except State Highway 67 on the eastern boundary. There are opportunities to become isolated from the sights and sounds of civilization.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: The primary recreational activities are baiting, fishing, hiking, and hunting.

Information on Wildlife Species, Populations, and Management Needs:

Management Indicator Species - RCW.

Water Availability and Use: Juniper Creek and several small intermittent and permanent streams flow through the area.

Livestock Operations: None.

Timber: There are recent harvest areas off of FR 126 and FR 199 and a current sale area along State Highway 67.

Minerals: None.

Cultural Resources: There is a prehistoric site, the Mexican Hard Hat site, in Section 8. It is eligible for listing on the National Register of Historic Places. This site extends both north and south of FH 13, the southern part of the site is in this RARE II area. There is a historic turpentining camp along a tributary of Juniper Creek, and a former hunt camp, Poplar Camp, was located in Section 13. There is a low probability of other sites being found.

Authorized and Potential Land Uses: Power line right-of-way along State Highway 67 is under special-use permit. A bee apiary is also under permit.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: There is a 3-4 year fuel buildup. Periodically prescribed burning is on a 3-4 year cycle. Areas of insect and disease infestations are salvaged and harvested.

What outputs are currently produced or could be produced in the future? Timber and dispersed recreation activities such as primitive camping, fishing, hiking, and hunting.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? Yes, this area contributes significantly to meeting timber harvesting objectives.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? Yes, by special-use permit for the power line right-of-way on State Highway 67.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Mud Swamp/New River Wilderness is about 6 miles to the west.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Mud Swamp/ New River Wilderness receives about 2.0 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of the surrounding county is stable but may be declining very slowly.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? The red-cockaded woodpecker, an endangered species, exists in this area. This area has not been surveyed extensively for PETS species.

Could these needs be provided for through means other than wilderness designation? Yes, through administrative designations such as special interest areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Natural Area WSA Roadless Area

I. DESCRIPTION

Acres: 4,400

Location and vicinity: Natural Area is in the north central portion of the Osceola NF Baker County, Florida. It borders the northern boundary of the forest about 25 miles from Lake City. Map coordinates are T1S, R19E. Northern boundary is the forest boundary, eastern boundary is the section lines of Sections 24 and 25, southern boundary is FR 277, and western boundary is FR 235.

Access, including roads and trails leading to the area: Access is by Forest Roads 232, 232-D, 232-E, 232-H, 232,01, 232-04, 232-05, 232-21, 232-26, 232-34, 235-01, 235-02, 299-01, 277-A, and 277-02. There are several old logging road, trails, and a few system roads leading into the area.

General description of the area geography: The Osceola NF is comprised of areas averaging 100 feet above mean sea level, with a series of marine terraces formed by seas in the early Pleistocene age. Soils were formed from these terrace deposits and are usually wet or waterlogged sandy floodplains or swamps, with a 20-40-inch sand cap overlying fine sandy clay loam. Mascotte soils are found on the flat ridges, and Pamlico soils are found in the large swamps or depressional areas.

General description of the area topography: Natural Area is usually flat with low ridges interspersed with swamps and intermittent creeks. Elevations range from 125 to 150 feet. Sand and clay soils, terraced by early Pleistocene seas, give the land a typically concave form. In most of

the area, the water table is on or near the surface year-round. In swampy areas, fine sand or fine sandy clay loam lies under 1 to 4 feet of muck.

General description of the area vegetation, including the ecosystem types: On higher elevations, ridges formed by the action of ancient seas, the plant community is pine palmetto flatwoods with slash pine dominating, but longleaf is common. Gallberry is the dominant understory plant, with scattered palmetto and wax myrtle. In swampy areas, the dominant vegetation is second-growth cypress or black gum, with loblolly bay, red maple, and sweet bay. Understory vegetation is fetterbush, gallberry, smilax, sweet pepperbush, and willow.

Key attractions, including sensitive wildlife and scenic landmarks: A key attraction is the research natural area (RNA) (373 acres of mixed hardwoods and 64 acres of cypress, some of which is old growth). Endangered species include red-cockaded woodpeckers, wood storks, and, possibly with reintroduction, Florida panthers. Sensitive wildlife includes Bachman's sparrows, Florida black bears, Florida pine snakes, and Sherman's fox squirrels.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? This area, except the research natural area, has been in regular forest management from the 1930s until 1983, when it was designated a wilderness study area. Since then the area has been managed as a potential wilderness area, but with no restrictions to the public. Before Federal ownership, most of the forested areas were cutover. The Forest Service regenerated these areas after acquiring them. Up until 1983, several areas had been logged and replanted. There are many old roads and logging trails. Turpentining operations were common over the entire area. Several old woods roads are not maintained but are still evident due to use by hunters.

To what degree is the area natural or natural appearing and free from disturbance? Much of the area shows obvious evidence of forest management activities: logging, old roads, firelines, and slash pine plantations. However, the research natural area appears very natural and free from disturbance. The total exclusion of fire from the RNA and from the entire wilderness study area since 1983 has allowed a buildup of fuels. It has also suppressed some fire-adapted species.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? The research natural area has the appearance of a natural, untrammeled state, as well as interior swamp areas. However, in several areas, mostly on the perimeter pine flatwoods, timber harvesting activities, old roads, and firelines from fire suppression and prescribed burns have disturbed the ecological processes and altered the appearance of the land.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes, surface and subsurface Federal ownership assures perpetuation of those values requiring protection. The RNA designation and the inaccessibility of

the interior swampland have helped provide primitive settings.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.
Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: There are several old logging roads off of FRs 277 and 232. Harvested areas can be seen from FR 277. There is an old borrow pit, about 25 years old, on FR 232.

Cultural treatments involving plantations or plantings: There is a bedded slash pine plantation (173 acres), planted in 1973, on FR 277. Another plantation (49 acres), planted in 1974, is on FR 232.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: There is an old barbed-wire fence around the research natural area. There are bridges, culverts, and two bee apiary sites—one at the intersection of FR 277 and FR 235 and one on FR 232. FR 235 is a major arterial level C road and includes a 100-foot concrete bridge over the Middle Prong of the St. Mary's River.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are 5 system roads and 10 primitive roads. The area has 6.6 miles of roads, which exceeds the maximum roadless criteria (2.2 miles).

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Closure of FR 232, which transects the area, could be accomplished but would cause management problems. It is a major arterial level C road and is important from a fire management perspective because it divides a large, roadless tract. Special-use permits for the two bee apiaries can be easily terminated or moved.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old woods roads are slowly being affected by the forces of nature. Given time and the actions of nature, these roads would be difficult to see. However, use during hunting season keeps these roads in evidence. System roads and bridges are maintained.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? The area provides some opportunities for solitude and serenity, especially in the interior swamps and the research natural area, although the small size of these areas does not readily present these opportunities. Some frequently used roads— such as FRs 277 and FR 232—contribute noise and other evidence of humans, which would impact solitude. The dense vegetation blocks much of the road noise; however, the visitor soon experiences a sense of isolation and quiet.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The area offers several opportunities for adventure and challenge in the remote, interior swamp areas. The limited access, dense vegetation, and high water table present challenges to the visitor and offer opportunities for initiative and self-reliance. The drier pine flatwoods have several old roads throughout these areas and offer fewer challenges and risks.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - There are opportunities for hunting.

Fishing - There are small creeks in the area that are good fishing spots and are used substantially by local recreationists.

Canoeing - None.

Boating - None.

River Rafting - None.

Backpacking - There are opportunities for backpacking along old woods roads and trails in the area.

Hiking - There are opportunities for hiking along old woods roads and trails in the area.
Riding - Old woods roads and trails provide opportunities for horseback riding.

Photography - There are opportunities for photography and nature study.

Birding - There are opportunities for bird-watching.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area has the capability to provide informal outdoor education, especially in the research natural area, but these opportunities are available on other parts of the Osceola NF. The RNA presents

many opportunities for scientific study of a natural area. There is potential for archeological research in this area.

Is there an abundant and varied wildlife population? Wildlife populations are typical of those found in lowland swamp areas and the slash pine/longleaf pine ecosystems. The area is habitat for Florida black bears, Florida panthers, indigo snakes, flatwoods salamanders, and wading birds.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Roaded Natural

VQO - Preservation (RNA), Partial Retention

Planned and Future Use - Continue RNA

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? No. The northern boundary is also the forest boundary, which is not easily recognizable by forest visitors. The eastern boundary is a section line, which is not recognizable on the ground.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. The western and southern boundaries are roads, offering several opportunities to enter the area.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? Those boundaries that are roads do not shield the area from the noise of passing vehicles and other sights and sounds of civilization. While the inaccessibility of some areas, such as swamps, acts as a shield to protect the environment inside from sights and sounds of civilization, the area may be too small to shield the sounds of civilization effectively.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes, those boundaries that are roads offer easy access to the perimeter of the area. Travel is difficult in the interior, and there is little access.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: Dispersed recreation activities include birding, camping, fishing, hiking, and hunting. There is motorized use on the trails and roads.

Information on Wildlife Species, Populations, and Management Needs:

Featured Species - Florida black bear, estimated population in Osceola NF is between 200-400.

Management Indicator Species - bald eagle, bobwhite quail, Florida black bear, gopher tortoise, pileated

woodpecker, RCW, turkey, and white-tailed deer.

Water Availability and Use: There is an abundance of water in this area. The swampland and lower elevations are usually under a foot or more of water year-round. The headwater of the Middle Prong of the St. Mary's River originates in this area.

Livestock Operations: The area is currently under a range allotment.

Timber: There are no recently harvested sites. The last plantation, located off of FR 232, was planted in 1974.

Minerals: None.

Cultural Resources: Cultural resource surveys have not been done in this area. However, there is a high probability of sites along the Middle Prong of the St. Mary's River. There is one recorded site in Section 25, but this may be a redeposited site.

Authorized and Potential Land Uses: There is a special-use permit for two bee apiary sites—one in Section 3 at the intersection of FRs 277 and 235 and the other in Section 25 adjacent to FRs 232 and 232-E. The area is within the Big Gum Swamp grazing allotment.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: There is a 25-35 year fuel buildup in the area and a 50+ year fuel buildup in the RNA where fires have been suppressed since designation as an RNA in 1936. Fire management policy is to suppress all wildfires, with no prescribed burning. The threat of wildfire escaping to private land is a major management concern. The area is entirely in Federal ownership. Management needs include prescribed burning and inventory of flora and fauna.

What outputs are currently produced or could be produced in the future? Outputs include camping, hunting, and other dispersed recreation.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? The research natural area is a unique and outstanding example of a natural environment with old-growth tree species. The area is open to the public, but development of special facilities is not warranted and would in fact detract from the naturalness of the environment.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? A wilderness designation

would limit access and possibly future research methods in the research natural area.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Big Gum Swamp Wilderness is adjacent to the area.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Big Gum Swamp receives 2.0 MRVDs per year. The area is used primarily by hunters in the fall and winter; this trend has been consistent for many years. Big Gum Swamp is also used by hikers, bird-watchers, and primitive campers.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of the surrounding area, especially Lake City, is expanding rapidly and should continue to increase. The majority of hunters come from Duval County. The population of both places is increasing.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation and primitive experiences.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? Yes, the Florida black bear and some bird species inhabit the interior, such as the prothonotary warbler and the North American wood stork.

Could these needs be provided for through means other than wilderness designation? Yes, through administrative designations such as special interest areas or wildlife management areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? Yes, breeding areas are vital for wading birds.

Pinhook Swamp Roadless Area

I. DESCRIPTION

Acres: 15,403

Location and vicinity: Pinhook Swamp is in the Osceola NF in Baker and Columbia Counties, Florida. Florida State Highway 2 bisects the northern portion from east to west. The Forest Service has acquired more than 34,000 acres of Pinhook Swamp and plans to acquire more. Map coordinates are T1N, R19E and T1N, R18E. The area is bounded on the east by Forest Roads 295, 296, 296-D, 296-E, and 297, by unmarked jeep trails on the west,

and by administrative boundaries on the north and south.

Access, including roads and trails leading to the area: The only public access to Pinhook is from State Highway 2, about one-half mile west of Eddy Tower on State Highway 295. Forest Roads 295-E and 296-D penetrate the area, and several canals have been dug to form roads.

General description of the area geography: The Osceola NF is comprised of areas averaging 100 feet above mean sea level, with a series of marine terraces formed by seas in the early Pleistocene age. Soils were formed from these terrace deposits and are wet or waterlogged sandy floodplains or swamps, with a 20-40-inch sand cap overlying fine sandy clay loam or fine sandy loam.

General description of the area topography: Pinhook Swamp is flat with low ridges, interspersed with swamps and intermittent creeks. The interior is swamp, with pine islands on the perimeter. Elevations range from 125 to 150 feet. Sand and clay soils, terraced by early seas, give the land a typically concave or depressional form. In most of the area, the water table is on or near the surface year-round. In the swampy areas, the fine sand or fine sandy clay loam lies under 1 to 4 feet of muck.

General description of the area vegetation, including the ecosystem types: On higher elevations, ridges formed by ancient seas, the plant community is pine palmetto flatwoods, with planted slash pine dominating. Pond pine is common. Gallberry is the dominant understory plant, with scattered palmetto and wax myrtle. In swampy areas, the dominant vegetation is second-growth cypress or black gum, with red maple, sweet bay, and loblolly bay. Understory vegetation is dense smilax, fetterbush, gallberry, sweet pepperbush, and willow.

Key attractions, including sensitive wildlife and scenic landmarks: The main attraction is Pinhook Swamp itself. Sensitive wildlife includes Carpenter frogs, flatwoods salamanders, eastern indigo snakes, Florida black bears, Sherman's fox squirrels, southeastern bats, southeastern big-eared bats, Bachman's sparrows, little blue herons, sandhill cranes, southeastern American kestrels, and tri-colored herons. Endangered wildlife includes wood storks.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? This area has been extensively logged, and canals have been dug to build roads and to drain water during high water.

To what degree is the area natural or natural appearing and free from disturbance? All the forested acres were logged during the 1930s. This is evidenced by residual stumps, dragline roads, and drainage ditches, which are still present. However, most of the swamp has recovered to a natural-appearing state, except for roads, canals, and some areas of planted and bedded slash pine on drier sites.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? The main swamp was cutover during the 1930s. However, it has regained

most of its natural appearance, except for the presence of the deeper canals, and species composition. Most of the area is inaccessible by ordinary means, except the upland sites that are presently in slash pine and planted on beds.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Mineral, gas, and oil rights are reserved by several individuals or entities.

Is more than 15 percent of the area in nonnative vegetation? No. Pinhook Swamp is almost entirely in native vegetation.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present:

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: There are areas where interests in gas, oil, and mineral have been reserved.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: Since the land was not in Forest Service ownership before 1992, there are no Forest Service harvesting operations. Previous owners harvested many areas of Pinhook Swamp. There are pine plantations mostly on islands of higher ground. Previ-

ous owners include industrial timber companies and several individuals. The Forest Service did a salvage sale after a wildfire, resulting in more than 300 acres being cut.

Cultural treatments involving plantations or plantings: Intensive site preparation—including raking, piling, windrowing, and bedding—occurred on all upland sites.

Private inholdings in the area: Pinhook Swamp has about 14 inholdings.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: Improvements include bridges, culverts, drainage ditches, and dragline roads with canals on each side.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are no system roads.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Nonconforming uses could be terminated by road closures. However, the road system will be evident for several years due to the dragline ditches used in construction of the main roads.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old logging roads and trams are slowly being affected by nature and eventually will be difficult to identify. However, canal roads and pine plantations are affected more by human forces than those of nature and are still very evident.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? Pinhook Swamp provides excellent opportunities for solitude and serenity. This is one of the most remote areas of northern Florida. There are few major roads near the area, and military overflights are not common.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The terrain, vegetation, limited visibility, and large roadless areas offer a high level of adventure, risk, and self-reliance. Negotiating Pinhook Swamp is a challenging experience.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are excellent opportunities for primitive camping.

Hunting - There is excellent hunting for small and large game.

Fishing - There are excellent opportunities for fishing in the many small ponds, creeks, and canals.
Canoeing - There are few opportunities for canoeing due to limited access.

Boating - No.

River Rafting - No.

Backpacking - There are opportunities for backpacking on old woods roads and logging trams, as well as cross-country.

Hiking - There are many opportunities for hiking on old woods roads.

Riding - There are many opportunities for horseback riding on old woods roads.

Photography - There are excellent opportunities for photography and nature study.

Birding - There are many opportunities for bird-watching.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? Pinhook Swamp is a large swamp that is an extension of the Okefenokee Swamp. It offers excellent opportunities for scientific study of large areas recovering from disturbance, native vegetation, and undisturbed wildlife habitat. It is capable of providing outdoor education opportunities, although access is limited. There is a high potential for archeological search in this area.

Is there an abundant and varied wildlife population? Wildlife populations are typical of those found in lowland swamps and slash pine/longleaf pine ecosystems. One of the major values of Pinhook Swamp is that it connects the Okefenokee Swamp with the Osceola NF and provides a corridor for wildlife to move between these two large tracts of Federal land. There are documented colonies of wading birds: great egret, little blue heron, cattle egret, and anhinga (100-500 birds).

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Primitive, Semiprimitive, Nonmotorized, Roaded Natural

VQO - Modification, Maximum Modification

Present uses include prescribed burning of the upland sites and identifying, maintaining, and improving the existing road system.

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Not at present. Boundaries are mainly on maps; on-the-ground landlines have not been developed.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? The swamp is the boundary and acts as a natural barrier to access by prohibited uses

such as motorized or mechanized equipment.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? Pinhook Swamp is in a remote location, and the boundaries are remote enough to assure protection from the sights and sounds of civilization.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Not at present.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: Recreation is limited to dispersed recreation, consisting mainly of hunting.

Information on Wildlife Species, Populations, and Management Needs: This information has not been established.

Water Availability and Use: There is an abundance of water in the area. The swampland and lower elevations are usually under a foot or more of water year-round.

Livestock Operations: There are no grazing allotments.

Timber: A salvage operation on 300 acres was conducted after a wildfire.

Minerals: None.

Cultural Resources: A cultural resource inventory has not been done. However, a cultural resource inventory was conducted on the site of a 300-acre salvage cut. About 40 sites were identified. An unusual site pattern exists that may be unique to the Pinhook and Okefenokee Swamps.

Authorized and Potential Land Uses: None.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: Historically, the upland sites in this area were managed for timber production and the swamps have been mainly ignored since the 1930s, except for fire suppression. This area, including Okefenokee Swamp, is prone to catastrophic fires during extended droughts. The most recent fire burned 11,500 acres in the Pinhook Swamp in 1989 and damaged timber resources on both private and Forest Service land. Accessibility to suppress wildfires, and the protection of adjoining landowners, is a major management concern.

What outputs are currently produced or could be produced in the future? Outputs are dispersed recreation—mainly hunting, hiking, and bird-watching.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to

wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? No.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Big Gum Swamp Wilderness is about 3 miles due south, and Okefenokee Swamp borders the north.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Big Gum Swamp receives 2.0 MRVDs per year. The area is used primarily by hunters in the fall and winter; this trend has been consistent for many years. Birding and hiking are also popular.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The immediate area of Pinhook Swamp is experiencing no change in population. In the surrounding counties, population is increasing, especially in Lake City and the city of Jacksonville.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? The surrounding national forest lands and Okefenokee Swamp on U.S. Fish and Wildlife Service lands offer many opportunities for dispersed recreation and primitive experiences.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? Possibly Florida black bear, reintroduction of the Florida panther, and nesting colonies of wading birds.

Could these needs be provided for through means other than wilderness designation? N/A

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? Presently, the area is being considered for reintroduction of the Florida panther. There is the possibility of nesting sandhill cranes. Pinhook Swamp is a critical link in the landmasses of Osceola NF and Okefenokee Swamp for large animals such as the sensitive Florida black bear and the endangered Florida panther. This linkage creates a wildlife corridor of several thousand acres for migration, habitat, and exchange of genetic material between populations.

Post Office Bay Roadless Area

I. DESCRIPTION

Acres: 7,280

Location and vicinity: This area is in the southwestern portion of the Apalachicola RD, Apalachicola NF, Liberty County, Florida, just north of the town of Sumatra. Map coordinates are T4S, R8W and T5S, R8W. The area is bound on the east by State Highway 65, on the south by County Road 379, on the north by FR 180, and on the west by FR 123, FR 123-C, and FR 106.

Access, including roads and trails leading to the area: Access to the area is by State Highway 65, County Road 379, and Forest Roads 123, 123-C, 106, and 180.

General description of the area geography: This area is very gently undulating and is poorly drained by a few permanent streams. The depth of the underlying bedrock of limestone and various layers of Miocene clastics and Pleistocene sands result in an impermeable strata, creating swampy lowlands. There are several irregular-shaped, shallow depressions, which represent the undulations of the former Pleistocene sea bottom.

General description of the area topography: The area is flat, composed of pine flatwoods and wetland swamps. Elevations range from 30 to 50 feet. The area is mostly swampland and savannah.

General description of the area vegetation, including the ecosystem types: The dominant overstory vegetation is longleaf and slash pine and savannah grasses in the open savannah areas. Titi is the predominant understory species, followed by gallberry and palmetto. There are some examples of the longleaf pine-wiregrass ecosystem on the higher elevations. More than half the area (4,225 acres) is in unsuitable land classes; that is, savannah, titi, and bottomland hardwood swamps. Of the suitable acres, 254 acres are in the 0-10 year age class, and 866 are in the 11-20 year class.

Key attractions, including sensitive wildlife and scenic landmarks: Savannah ecosystems, small to medium patches of savannah, can be found scattered throughout this area. Forest Road 379, forming a small part of the eastern border of the area, is part of the Apalachee Savannahs Scenic Byway. This allows the public to view and experience this unique ecosystem. Several small savannahs are designated as special botanical interest areas, preserved for educational purposes.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Human activities are very noticeable in the area. There are several areas of recent timber harvest, and a few areas presently marked for sale. Old woods roads leading into the area are not maintained but are still evident due to use for hunting and baiting.

To what degree is the area natural or natural appearing and free from disturbance? The savannah areas still appear natural and undisturbed. Forested parts of the areas show obvious evidence of forest management activities.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land

regaining a natural, untrammeled appearance? Human activities have kept the land in an altered condition. Past management strategies of emphasizing timber harvesting have altered the natural appearance of the land.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes, except 270 acres of private land in the northern corner owned by the St. Joseph Land and Development Company. This private land could be excluded from the area.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: There are several old logging roads off of FR 106 leading into a timber sale area. Several harvested areas can be seen from State Highway 65.

Cultural treatments involving plantations or plantings: Yes, site-preparation burns before planting in Compartments 68 and 77.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: None.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are 8 system roads and 5 primitive roads. There are 11.3 miles of roads, exceeding the maximum roadless criteria of 3.6 miles.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Yes, special-use permits could be terminated for activities within the area. The special-use permit for the right-of-way for State Highway 65 could not be easily terminated.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old woods roads are slowly being affected by the forces of nature. Use during hunting season keeps the roads drivable, but they are slowly becoming muted.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? Few opportunities exist for solitude and serenity. The presence of State Highway 65 and a railroad to the east of it and County Road 379 to the south and west contribute to the obvious sights and sounds of civilization.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The area offers little opportunity for adventure, excitement, or challenge. Access is easy due to roads on all boundaries.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - There are opportunities for hunting, the primary recreational activity.

Fishing - Moderate fishing is available in Owl Creek.

Canoeing - Owl Creek offers some opportunity for canoeing, usually confined to the wetter times of the year.

Boating - None.

River Rafting - None.

Backpacking - Old woods roads and savannah offer some backpacking opportunities.

Hiking - Old woods roads and savannah offer limited hiking opportunities.

Riding - Horseback riding opportunities are on old woods roads in the area.

Photography - There are excellent opportunities for photography and nature study, especially in the savannah portions.

Special Features: Apalachee Savannahs Scenic Byway borders the area.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area has the capability to provide informal outdoor education, but these opportunities are also available on other parts of the Apalachicola NF. Since the area has been frequently disturbed by harvesting activities, few opportunities exist for scientific study of large, undisturbed areas. There is limited potential for archeological research.

Is there an abundant and varied wildlife population? Wildlife populations are

typical of the general forested area of longleaf/ slash pine.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Roaded Natural

VQO - Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No. The northern boundary of FR 180 is adjacent to St. Joseph Land and Development Company land which has no public use.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Boundaries are roads, which offer easy entry into the area.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. Noise from nearby highways easily penetrates the area.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: The primary recreational uses are fishing, hiking, and hunting.

Information on Wildlife Species, Populations, and Management Needs:

Featured Species - Harper's beauty, white birds-in-a-nest, Florida skullcap.

Management Indicator Species - RCW.

Water Availability and Use: There are several intermittent and small perennial streams.

Livestock Operations: None.

Timber: Recently harvested areas are off of FR 106 and State Highway 65. Several areas recently marked for sale are along FR 180 and FR 123.

Minerals: None.

Cultural Resources: A historic site associated with Bon Ami is in Section 24. Another site is off of FR 123-G.

Authorized and Potential Land Uses: The power line right-of-way along State Highway 65 is under special-use permit.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: The area has a 3-4 year fuel buildup. Periodically prescribed burning is done on a 3-4 year cycle. Areas of insect and disease infections are salvaged and harvested.

What outputs are currently produced or could be produced in the future? Timber and dispersed recreation activities such as primitive camping, fishing, hiking, and hunting.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? Yes, by special-use permit for the power line right-of-way.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Mud Swamp/New River Wilderness is about 4 miles to the east.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Mud Swamp/ New River Wilderness receives about 2.0 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of the surrounding county is stable.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation activities.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? There are several sensitive plant species and a sensitive species of snake. There are two threatened species of plants—white birds-in-a-nest and Florida skullcap. There is also one endangered plant species, Harper's beauty. This is one of the most biologically diverse areas in the forest. It contains 14 sensitive species, 3 threatened species, and 1 endangered species.

Could these needs be provided for through means other than wilderness designation?

Yes, through administrative designations such as special interest areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Providence Roadless Area

I. DESCRIPTION

Acres: 6,885

Location and vicinity: This area is in the south central portion of the Apalachicola RD, Apalachicola NF, Liberty County, Florida, directly north of the Mud Swamp/ New River Wilderness. Map coordinates are T4S, R7W and T4S, R6W. The area is bound on the north by FH 13, on the east by FR 120, on the south by FR 182 and Mud Swamp/New River Wilderness, and on the west by FR 155.

Access, including roads and trails leading to the area: Access to the area is by FH 13, FR 120, FR 182, and FR 155. There is a system road, FR 120-D, that bisects the middle of the area from east to west but dead ends in Section 35.

General description of the area geography: This area is very gently undulating and is poorly drained by a few permanent streams. The depth of the underlying bedrock of limestone and the various layers of Miocene clastics and Pleistocene sands result in an impermeable strata, which creates the swampy lowlands. There are several irregular-shaped, shallow depressions, which represent the undulations of the former Pleistocene sea bottom.

General description of the area topography: The area is flat, composed of pine flatwoods and wetland swamps. Elevations range from 30 to 50 feet. Most of the area is swampland.

General description of the area vegetation, including the ecosystem types: The dominant overstory vegetation is slash pine, with some longleaf, and has an understory of titi, palmetto, and gallberry. A large area of titi encroachment, 4,130 acres, represents most of the 5,512 unsuitable land-class acres. Although there are 561 acres in the 0-20 year age class, there is a fair amount of acres (both suitable and unsuitable) in the 51-60+ year age class.

Key attractions, including sensitive wildlife and scenic landmarks: FR 182 forms the southern border and is the only access point to Magnolia Landing—a popular picnic spot and the take-out point for the New River Canoe Trail.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Recent human activities are noticeable. Recently harvest areas, young plantations, and areas recently marked for sale have affected the ecological conditions of the area. Old woods roads leading into the area are not maintained but are still evident. FR 120-D is maintained and has culverts. There is an active borrow pit off of FR 170. The area contains older slash pine plantations, with large wooden signs showing dates of planting and site preparation. Several cavity trees are

marked with highly visible, white-painted bands. There is a bee apiary on FR 182.

To what degree is the area natural or natural appearing and free from disturbance? Much of the area is in older plantations where logging roads are still evident. With the passage of time, these roads could easily become overgrown.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? No. Old woods roads, plantations, and firelines are still evident and prevent the land from regaining a natural appearance.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: Magnolia Landing, off of FR 182, is a day-use site and the take-out point of the New River Canoe Trail.

Timber harvest areas where logging and prior road construction are or are not evident: There are old logging roads off of FH 13, FR 120, and FR 182. One area off of FR 120 has been recently marked for sale. There are 540 acres of slash pine plantations.

Cultural treatments involving plantations or plantings: None.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: There is a bee apiary off of FR 182 and an active borrow pit off of FR 120.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There are 9 system roads. There are 12.1 miles of roads in the area, which exceeds the roadless criteria of 3.44 miles.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? Nonconforming uses can be easily terminated or removed, except the borrow pit. Extensive work would need to be done to return the borrow pit to a natural-appearing condition.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old woods roads can be rapidly affected by the forces of nature and can quickly disappear. Use during hunting season keeps some old logging roads drivable and prevents them from becoming muted or disappearing. The borrow pit would not disappear or become muted by the forces of nature.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? The interior of the area offers opportunities to experience solitude and serenity, allowing the visitor to feel isolated from the sights and sounds of civilization. Since the area is bound on the west and south by Mud Swamp/New River Wilderness, it is buffered from the impacts of human activities. FH 13, bounding the area on the north, contributes the most amount of noise pollution. Military overflights also impact solitude.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The area offers some opportunities for adventure, excitement, and challenge in the interior swamp. The terrain, vegetation, and limited visibility contribute to a sense of self-reliance and risk-taking and can make travel difficult. In some places, the slash pine overstory and tall gallberry understory create a sense of adventure, beauty, and discovery that is unique to this area. Access to the area would be from the two boundary roads on the north and the east, FH 13 and FR 120, and one interior dead-end road, FR 120-D.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - Opportunities exist for hunting both large and small game, and it is the primary recreational activity.

Fishing - The area offers limited opportunities for fishing.

Canoeing - The area offers no opportunities for canoeing.

Boating - The area offers no opportunities for boating.

Backpacking - Backpacking opportunities are provided by old woods roads and by bushwhacking.

Hiking - There are opportunities for hiking on old woods roads.

Riding - There are opportunities for horseback riding on old woods roads.

Photography - There are opportunities for photography and nature study.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? Opportunities exist for informal outdoor education and formal and informal scientific study. Lack of roads and trails into the area and difficult terrain limit these opportunities but provide a large, undisturbed area for study.

Is there an abundant and varied wildlife population? Wildlife populations are typical of those found in the longleaf/slash pine ecosystems and cypress/black gum swamps.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Roaded Natural

VQO - Maximum Modification

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? Magnolia Landing, take-out point for the New River Canoe Trail, is located on FR 182, the southern boundary of the area. Since the area is adjacent to Mud Swamp/ New River Wilderness, it would be logical to consider this area as an addition to Mud Swamp Wilderness. However, this would require closing FR 182 and removing Magnolia Landing. An alternative would be to make Providence a separate wilderness area.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. The northern and eastern boundaries are roads, which would allow easy access to the area by motorized or mechanized equipment.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? The western and southern boundaries, adjacent to Mud Swamp/New River Wilderness, would protect the area from most of the sights and sounds of civilization. The eastern boundary, FR 120, and especially the northern boundary, FH 13, contribute noise impacts. Military overflights are common in the area.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? In the northern and eastern parts of the area, the boundaries provide good access and transfer facilities.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: The primary activities are dispersed recreation such as fishing, hiking, and hunting.

Information on Wildlife Species, Populations, and Management Needs:

Management Indicator Species - RCW and Florida black bear.

Water Availability and Use: There are several intermittent and small perennial streams.

Livestock Operations: None.

Timber: The most recently harvested areas were Compartments 61 and 62 in 1985; and they now have young pine plantations (1-10 years).

Minerals: None.

Cultural Resources: Magnolia Landing (Section 1) is one of the earliest ceramic sites identified. It is eligible for listing in the National Register of Historic Places. There is a prehistoric site in Section 35, and Twin Pole historic turpentining camp is located in the area. This area has a high probability for additional sites.

Authorized and Potential Land Uses: One special-use permit for a bee apiary.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: There is a 3-year fuel buildup. Prescribed burning is on a 3-4 year cycle. Areas of insect and disease infestations are salvaged and harvested.

What outputs are currently produced or could be produced in the future? Timber and dispersed recreation activities such as primitive camping, fishing, hiking, and hunting.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? No.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Mud Swamp/New River Wilderness is adjacent to the area on the south and west.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Mud Swamp/ New River Wilderness receives about 2.0 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The

population of the surrounding area is stable.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation, and Mud Swamp/New River Wilderness is adjacent to the area.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? There are RCW clusters in the area.

Could these needs be provided for through means other than wilderness designation? Yes, through administrative designations such as special interest areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

Savannah Roadless Area

I. DESCRIPTION

Acres: 1,945

Location and vicinity: This area is in the southwestern portion of the Apalachicola RD Apalachicola NF, Liberty County, Florida. Map coordinates are T4S, R8W. The area is bound on the north by FR 180, on the east and south by FR 123, and on the west by State Highway 379.

Access, including roads and trails leading to the area: Access to the area is by FR 180, FR 123, and State Highway 379.

General description of the area geography: This area is very gently undulating and is poorly drained by a few permanent streams. The depth of the underlying bedrock of limestone and various layers of Miocene clastics and Pleistocene sands result in an impermeable strata, which creates the swampy lowlands. There are several irregular-shaped, shallow depressions that represent the undulations of the former Pleistocene sea bottom.

General description of the area topography: The area is flat, composed of open savannah and a few areas of longleaf pine. Elevations range from 30 to 50 feet. There are a few wetter sites with hardwood shrubs, which appear as oases dotting the savannah.

General description of the area vegetation, including the ecosystem types: The dominant overstory vegetation of the forested part is longleaf pine, with an understory of wiregrass, titi, gallberry, and palmetto. On the higher elevations are areas of the longleaf pine-wiregrass ecosystem. Most of the area is in unsuitable land classes, due to the amount of savannah and swampy areas of bottomland hardwoods. Of the total acres, close to half (865 acres) are in the 60+

year age class, mostly longleaf pine and bottomland hardwoods.

Key attractions, including sensitive wildlife and scenic landmarks: The area provides excellent examples of the savannah ecosystem; 468 acres of savannah are preserved in the Apalachicola research natural area.

II. INVENTORY

Human Influence

To what degree have humans and past and present human activity affected natural ecological processes and conditions? Human activities are not very noticeable in the area, except for a small number of old roads leading into the savannah proper. The savannah ecosystem has been maintained with prescribed burning, and the longleaf pine-wiregrass ecosystem has been protected. There are several cavity trees with highly visible, white-painted bands.

To what degree is the area natural or natural appearing and free from disturbance? In general, the savannah area appears very natural and free from disturbance. However, there are several old firelines going through the savannah which disrupt the hydrology of the area. Hypericum has colonized these old firelines.

If the area ecological processes and/or natural appearance have been altered by past or present human activity, is the land regaining a natural, untrammeled appearance? Yes. Past human activities include old roads leading into the savannah and some firelines, but the savannah appears to be in a natural state. Prescribed fire, a present human activity, helps to keep the ecosystem intact.

Does the existing or attainable National Forest System ownership pattern, both surface and subsurface, ensure perpetuation of identified wilderness values? Yes.

Is more than 15 percent of the area in nonnative vegetation? No.

Improvements, Structures, and Nonconforming Uses

Are any of the following types of areas, features or nonconforming uses present?

Areas with evidence of historic mining at least 50 years old: None.

Areas under current mineral lease that contain a ``no surface occupancy'' stipulation: None.

Areas under current mineral lease where the lessee has not exercised development and occupancy rights: None.

Recreation improvements such as occupancy spots or minor hunting or outfitter camps: None.

Timber harvest areas where logging and prior road construction are or are not evident: Seven to eight old woods roads leading into the area are still evident.

Cultural treatments involving plantations or plantings: None.

Private inholdings in the area: None.

Dwellings on private inholdings: None.

Nonconforming structures and improvements: None.

Ground-return telephone lines: None.

Watershed treatment areas: None.

Roads: There is one system road, FR 179-K. This road is 1.7 miles, which exceeds the maximum roadless criteria of .97 miles.

Can existing nonconforming uses be effectively mitigated or terminated through removal or rapid natural deterioration? The special-use permit for the right-of-way along State Highway 379 could not be easily terminated.

Are improvements in the area being affected by the forces of nature rather than humans, and are they disappearing or muted? Old woods roads are slowly being affected by the forces of nature and are becoming muted.

III. EVALUATION

Capability

> Does the area contain the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness? Consider the following characteristics in analyzing the quality of the wilderness resource. If these characteristics are determined to be important, describe and refer to them.

Experiential Benefits. Does the area provide the opportunity for solitude and serenity? Few opportunities exist for solitude and serenity. State Highway 379 on the western border contributes to the obvious sights and sounds of civilization. In the interior of the savannah, however, the visitor can feel a sense of isolation due to the openness of the savannah.

Challenge. Does the area offer visitors the opportunity to experience adventure, excitement, challenge, initiative, or self-reliance? Is access easy or difficult? The area offers little challenge, adventure, or excitement. Access is easy due to roads on all boundaries.

Outdoor Recreation Opportunities. What is the area capability for providing primitive and unconfined types of recreation including:

Camping - There are opportunities for primitive camping.

Hunting - Opportunities for hunting are limited.

Fishing - The headwater of Kennedy Creek offers fishing opportunities.
Canoeing - Parts of Kennedy Creek may be navigable.

Boating - Kennedy Creek offers limited boating.

Backpacking - Old woods roads offer opportunities for backpacking.

Hiking - Old woods roads provide opportunities for hiking.

Riding - Old woods roads provide opportunities for horseback riding.

Photography - There are opportunities for photography and nature study.

Special Features: The area offers excellent examples of the savannah ecosystem.

What is the capability of the area to provide outdoor education and scientific study, both formal and informal, in a manner compatible with wilderness? The area has the capability to provide informal outdoor education, but these opportunities are also available on other parts of the Apalachicola RD. The area offers excellent opportunities to study the savannah and longleaf pine-wiregrass ecosystems. Potential for archeological research is limited.

Is there an abundant and varied wildlife population? Wildlife populations are typical of the longleaf pine-wiregrass ecosystem, although the openness of the savannah may indicate lower population numbers in these areas. There are some RCW clusters.

Manageability

What are the characteristics of the surrounding area including ROS classification, adopted VQO, and present and planned uses?

ROS - Roaded Natural

VQO - Partial Retention

Do boundary locations conflict with important existing or potential public uses outside the boundary that might result in demands to allow nonconforming structures and/or activities in the wilderness? No.

Is it possible to readily and accurately describe, establish, and recognize boundaries on the ground? Yes, all boundaries are roads.

Do boundaries, where possible, conform with terrain or other features that constitute a barrier to prohibited use? No. Boundaries are roads, which offer several opportunities to enter the area.

Do boundaries, to the extent practicable, act as a shield to protect the wilderness environment inside the boundary from the sights and sounds of civilization? No. Noise from nearby roads, especially State Highway 379, easily penetrates the area. The smallness of the area contributes to its being impacted by noise from roads. Military flights are common in the area.

Do boundaries provide adequate opportunity for access and traveler transfer facilities? Yes.

Availability

Describe other (nonwilderness) resource demands and uses. What current uses exist?

Recreation: The primary recreational uses are fishing and hiking.

Information on Wildlife Species, Populations, and Management Needs:

Management Indicator Species - RCW.

Water Availability and Use: There are several intermittent streams, as well as the headwater of Kennedy Creek.

Livestock Operations: None.

Timber: None.

Minerals: None.

Cultural Resources: This area has a low probability of cultural sites. Some survey work has been done here, but nothing has been found. There may be a historic site off of FR 180 where several hand-hewn

logs have been found at an old logging site.

Authorized and Potential Land Uses: Special-use permit for right-of-way along State Highway 379.

Management Considerations, including Fire, Insects and Diseases, and Presence of Non-Federal Land: There is little fuel buildup in the area. Periodically prescribed burning is on a 3-4 year cycle.

What outputs are currently produced or could be produced in the future? Dispersed recreation activities, environmental education, and scientific study.

Is the area located such that the need for increased water production and/or additional on-site storage is so vital that installation or maintenance of improvements is an obvious and inevitable public necessity? No.

Would wilderness designation seriously restrict or prevent the application of wildlife management measures of considerable magnitude and importance? No.

Is it a highly mineralized area of such strategic or economic importance and extent that restrictions or controls due to wilderness designation would not be in the public interest? No.

Does the area contain natural phenomena of such unique or outstanding nature that general public access and special development to facilitate public enjoyment should be available? No.

Is the land needed to meet clearly documented resource demands such as for timber, mineral production, or developed recreation? No.

Is the land committed through contractual agreements for use, purposes, or activities not in concert with wilderness requirements? Yes. There is special-use permit for right-of-way along State Highway 379.

Needs

Other Wildernesses

How far is it to the closest existing wilderness? Mud Swamp/New River Wilderness is about 5 miles to the east.

What level of use currently exists in nearby existing wilderness? What trends exist in the use of these areas? Mud Swamp/ New River Wilderness receives about 2.0 MRVDs per year.

Is the population in and around these areas increasing or decreasing? How quickly is it increasing or decreasing? The population of the surrounding area is stable.

Nonwilderness Lands

Are there opportunities for unconfined and primitive recreation experiences on nonwilderness areas in the vicinity? If so, where? Surrounding national forest lands offer many opportunities for dispersed recreation.

Habitat

Are there any biotic species in the area that are directly competing with increasing public use and development? There are eight species of plants listed as sensitive in this area.

Could these needs be provided for through means other than wilderness designation? Yes, through administrative designations such as special interest areas or botanical areas.

Is there a need to provide a sanctuary for biotic species that cannot survive in less than primitive surroundings? No.

APPENDIX D

WILD AND SCENIC RIVERS

This appendix contains findings pertaining to Alexander Springs Creek, Juniper Creek, New River, and Ochlockonee River, located within *National Forests in Florida*. This appendix documents which of these four rivers have qualities that make them eligible for inclusion in the National Wild and Scenic Rivers System. It also determines the potential classification (wild, scenic, or recreational) that best fits the eligible river segments.

Two other rivers (Apalachicola and Ocklawaha Rivers) adjoin the boundaries of the Apalachicola and Ocala National Forests (NFs), respectively, and are included in the National Rivers Inventory. The Forest Service is not determining their eligibility because they touch only a small part of these national forests. Lead responsibility for evaluating these rivers rests with either another Federal agency or the State, depending on which has jurisdiction over the largest proportion of the lands involved. A third river, the Middle Prong of the St. Mary's River, lies partially within the Osceola NF. This was evaluated previously as part of the St. Mary's River and was determined to be ineligible. A fourth river, the Sopchoppy River, has been determined eligible. The Final Environmental Impact Statement for the suitability study has been completed.

An eligibility evaluation is an initial step in a process that requires action by Congress to include a river in the National Wild and Scenic Rivers System. A determination locally that a river is eligible does not mean that it will meet suitability criteria when it is studied from a national perspective. Suitability studies represent the final step in determining whether a river is recommended to Congress for further consideration.

The Wild and Scenic Rivers Act as amended and the Final Revised Interagency Guidelines for Eligibility, Classification, and Management of River Areas (47 *Federal Register* 39454, September 7, 1982) provide direction for determining the eligibility and classification of inventory rivers.

Eligibility

To be eligible for designation as a component of the National Wild and Scenic Rivers System, a river must be free-flowing and possess one or more of the following outstandingly remarkable values: (1) scenic, (2) recreational, (3) geological, (4) fish and wildlife, (5) historic and heritage, or (6) ecological. The river must possess exceptional values that are either rare or representative/exemplary within the study area. Exemplary features are outstanding examples of otherwise common, but important, characteristics of the area. Representative/exemplary, as well as rare, features are recommended for evaluation since the nation's river conservation efforts should protect not only rarities but also the best ``typical'' examples of our river diversity.

The Wild and Scenic Rivers Act does not specifically define ``outstandingly remarkable," and the determination of these values is primarily a judgement of the evaluation team. However, if a river has nationally significant resource features, it qualifies as being outstandingly remarkable. In addition, the Wild and Scenic Rivers Act, as well as subsequent congressional and agency actions, supports the position that regionally significant features also qualify. Congress clearly intended that rivers included in the system would have more than local significance. Congress has itself designated rivers that must be considered of regional, rather than national, significance as wild and scenic, as well as rivers of national significance. Both agency guidelines and the National Rivers Inventory recognize the importance of regional representation in the Wild and Scenic Rivers System.

Documentation that features are rare in the region or nation can be accomplished either by conducting a study to demonstrate their rarity, or, more frequently, by citing an existing authority (for example, lists of threatened or endangered species).

If representative/exemplary features exist, an analysis of similar features on comparable rivers may be prepared, using existing studies where available (e.g., ``Florida Rivers Assessment" report). Because of the lack of quantitative data about these rivers and with limited financial resources and time to collect new data, a simplified qualitative evaluation process was selected. In this process, the four representative rivers were rated, using professional judgement, against predetermined criteria.

Rivers arise from distinctly different sources. They may be spring-fed, alluvial, blackwater, or various combinations of these three. For comparison purposes, each river has been placed in one of these categories and will be rated only against other rivers in its category. If a river does not have an outstandingly remarkable characteristic, it will be rated against similar rivers in its category. New River and Ochlockonee River are blackwater rivers and would be rated against the Aucilla, Blackwater, Econfina, Sopchoppy, and Waccasassa Rivers. Alexander Springs Creek and Juniper Creek are spring-fed rivers and would be rated against the Ichetucknee, Silver, Rainbow Springs, Wacissa, and Wekiva Rivers.

These comparable rivers have been drawn from the physiographic regions known as the Florida Coastal Lowlands section and the Florida portion of the East Gulf Coastal Plain section. The former is the low, sandy, poorly drained area that forms the coastline of Florida. Its development has been strongly influenced by marine forces. Common landforms include coastwise terraces, scarps, barrier islands, estuaries, and dune ridges. The latter is a rolling, sandy plain that constitutes the interior portion of Florida. Its features include hills, swampy plains, lakes, and sinkholes. The presence of soluble limestone close to the surface has strongly influenced the development of surficial features, most notably lakes and sinkholes.

The next step of the analysis had two phases: first, to determine which resource factors will be used in the evaluation, and second, to identify the categories (and their descriptions) into which each river would be placed. The distinctive category would include those rivers that ranked at the highest level for the resource factor being evaluated. It is assumed that any river that achieves this ranking would have

an outstanding remarkable value. Most rivers will fall into the intermediate category that is referred to as common. The last category, minimal, is reserved for those rivers with few, if any, redeeming qualities for the resource factor being evaluated. Following is the description of each within the three categories—distinctive, common, and minimal.

Scenic

Distinctive

Landscape Variety—The river passes through a wide variety of landscapes. Vistas constantly vary in a horizontal and, sometimes, vertical dimension. They can alternate between narrow passages bordered by overhanging trees to long, broad scenes across wetlands. Within the river's length, the viewer may see several well-defined examples of the landform(s) through which the river is flowing. They can include sand bluffs, limestone walls, sinkholes, caves, and highly dissected tributaries. Tributaries may alternate between strikingly different water sources—alluvial, blackwater, spring-fed, and steephead seepage. Plant communities, with little evidence of disturbance, array themselves in diverse patterns. They may feature species—such as cypress, magnolia, and palmetto—that provide interesting contrasts in color, texture, and form. The appearance of the river alternates between slow moving, flat, and placid to rapid, swirling, and alive.

Common

Landscape Variety—The river passes through many landscapes, with some of them predominating for long distances. The width remains fairly constant. One or two landforms prevail over most of the river's length. Tributaries usually arise from the same water source throughout the river's length. Plant communities are not unique. The river is usually slow moving, with occasional short stretches of swift water where the river passes over shoals. In general, the scenery is pleasant but unexceptional.

Minimal

Landscape Variety—Throughout its length, the river passes through a landscape with little variety. Vistas remain constant as the river flows with little change in direction. The river width varies little and provides essentially the same view along its banks. The landform through which the river flows is unchanging; and there are no striking examples of its characteristics. It consists of flat valley bottoms or swampy lowlands with little or no relief. Tributaries arise from the same type of water source. Large areas of similar forest communities exist here—such as pine flatwoods, titi and gum swamps, and pine plantations along the river's banks. The river may be flat, slow moving, and placid.

Recreational

Distinctive

Canoeing/Kayaking—The river provides an interesting and challenging canoeing experience because of the presence of rapids, boulders, and fast-moving water. It is distinguished because of the absence of such experiences elsewhere in the region. Many people are attracted to the recreational opportunities.

River Orienteering—Rocks, logs, brush, stretches of riverbed with little or no water, and large areas with braided ill-defined channels require the orienteerer to combine high skill levels with strength and persistence to navigate successfully

the river. Natural forces of uncertain danger and long distances to safety force those wishing to navigate the river to accept a high degree of challenge and risk.

Hiking—Many opportunities exist for hiking along the river. Trails may pass over level and hilly terrain, across swamps, and through a variety of plant communities. These opportunities provide a variety of hiking experiences not found anywhere else in the region.

Fishing—The river is rated as a premier fishing experience because it supports trophy-size bass, bream, and crappie and, if emptying into the Gulf of Mexico, flounder, redfish, and trout.

Common

Canoeing/Kayaking—The river provides a pleasant, leisurely float trip for the family. Few canoeing skills are needed. There is little challenge because of the presence of a gentle current with few rapids, boulders, or other obstacles.

River Orienteering—Occasional short stretches (usually less than ½ mile) of obstacles require the orienteerer to exercise navigation skills. Most of the time there is little challenge.

Hiking—Many opportunities exist for hiking trails in the river corridor. However, swamps and bottomlands that are subject to flooding may require extensive stretches of the trail to be located away from the river.

Fishing—Trophy-size populations of at least one freshwater species may be found.

Minimal

Canoeing/Kayaking—Canoeing on these rivers may be very easy with no challenge or risk because of slow-moving water and the absence of any rapids, boulders, or other natural features that require skills to maneuver.

River Orienteering—The absence of obstacles on the river eliminates any concept of challenge to successful navigation of its entire length. At no point is the orienteerer required to exert skills or strength beyond a basic minimum level.

Hiking—The presence of numerous swamps and bottomland hardwoods that are subject to flooding prevent the construction of hiking trails anywhere near the river.

Fishing—Fishing opportunities fluctuate throughout the year as the river level rises and falls. Several game species may exist in the river but are not exceptionally large.

Geological/Hydrological

Distinctive

Presence of Rare/Unique Geological Features—The river corridor contains regionally significant examples of geological features. Among these could be large well-defined sinkholes, disappearing rivers, steephead ravines, or exposed bedrock of regional significance.

Water Flow and Clarity—The river either arises from a first-magnitude spring, is fed by an exceptional number of springs, or is an alluvial or blackwater river with a fast current.

Common

Presence of Rare/Unique Geological Features—The river corridor contains examples of geological features that are typical of the region. These could include ordinary sinkholes and other karst features.

Water Flow and Clarity—The river either arises from a first- or second-magnitude spring with average clarity or is an alluvial or blackwater river with a moderate flow. It is difficult to see the channel bottom.

Minimal

Presence of Rare/Unique Geological Features—The river contains no rare/unique geological features.

Water Flow and Clarity—The river either arises from a spring of less than second magnitude or is an alluvial or blackwater river with average or less flow.

Fish and Wildlife

Distinctive

Species Diversity and Abundance—While traveling down the river, the viewer sees most of the species that are characteristic of the region. These species are present in such large numbers that the viewer seemingly ``kicks up'' or bumps into them at every turn in the river.

Presence of Threatened and Endangered Species—The river corridor is the only one that is known to provide riverine habitat for populations of threatened and endangered species, or the river contains populations of most of the threatened and endangered riverine species that are present in the region.

Use as a Wildlife Corridor—The river is recognized as a major pathway for migratory species or as a connector of two or more large (250,000+ acres) fragmented areas.

Endemism—The area within the river corridor is recognized as a regional center of endemism.

Common

Species Diversity and Abundance—The viewer may see many species but their numbers are small. Each species is spotted only occasionally throughout the trip.
Presence of Threatened and Endangered Species—Populations of one or two threatened or endangered species are present in the river corridor.

Use as a Wildlife Corridor—The river serves as a connector between locally significant fragmented areas (50,000 to 250,000 acres).

Endemism—A few endemic species may be found within the corridor.

Minimal

Species Diversity and Abundance—Waterfowl and other species are rarely seen throughout the river voyage, those that are encountered belong to a small range of species.

Presence of Threatened and Endangered Species—There are no populations of threatened and endangered species within the river corridor.

Use as a Wildlife Corridor—The corridor is less than 10 miles long, serves local species only, and connects fragmented areas that are less than 50,000 acres.

Endemism—No endemic species are present in the corridor.

Historical/Heritage

Distinctive

Site Density—The river corridor contains many multicomponent village sites or communities.

Site Clustering—The corridor contains atypical clustering of sites that indicates unusual or significant site patterns.

Significant or Unique Sites—The river contains one or more sites whose cultural material is one of a kind, represents a very rare characteristic, or contains one or more sacred sites. Many of the sites along the corridor are eligible for the National Register of Historic Places.

Common

Site Density—The river corridor contains many sites, a few are multicomponent.

Site Clustering—There is no atypical clustering of sites within the corridor that indicates unusual or significant site patterns.

Significant or Unique Sites—The river contains one or more sites that are eligible for the National Register of Historic Places.

Minimal

Site Density—There are very few sites along the river, whether multicomponent or not.

Site Clustering—There is no discernible clustering of sites within the corridor.

Significant or Unique Sites—There are no sites that are eligible for the National Register of Historic Places.

Ecological

Distinctive

Diversity—Most of the plant communities in a region may be seen within the river corridor. More than 90 percent of them have natural origins.

Presence of Threatened and Endangered Species—The river corridor contains essential habitat for threatened or endangered riverine species, or contains essential populations of threatened and endangered species and they are living in a healthy state.

Presence of Rare Communities—At least three of the biological communities that are described as rare by the Florida Natural Areas Inventory are found within the corridor.
Endemism—The river lies within an area that is recognized as a regional center of endemism.

Common

Diversity—The river landscape is dominated by a small number of plant communities. Specific communities may predominate for long distances (more than 1 mile). Many of them may have artificial origins.

Presence of Threatened and Endangered Species—Populations of one or two threatened or endangered plant species are present, or essential habitat for threatened or endangered plant species exists.

Presence of Rare Communities—One or two of the biological communities that are described as rare by the Florida Natural Areas Inventory are found within the corridor.

Endemism—A few endemic species may be found within the corridor.

Minimal

Diversity—Diversity is low. Only a few communities are present. They may predominate for long distances and may have artificial origins.

Presence of Threatened and Endangered Species—There are no populations of threatened and endangered species within the river corridor.

Presence of Rare Communities—None of the biological communities that are described as rare by the Florida Natural Areas Inventory is found within the corridor.

Endemism—No endemic species are found in the corridor.

ALEXANDER SPRINGS CREEK
ELIGIBILITY AND CLASSIFICATION STUDY

Alexander Springs Creek is a clear, spring-fed creek that arises from a first-magnitude spring on Ocala National Forest (NF) and flows 10 miles to join the St. Johns River. The spring has a daily flow of 60-80 million gallons and is a constant 72 degrees year-round. It is a main attraction for visitors to the Ocala NF. Alexander Springs Recreation Area centers on the developed beach at the mouth of the spring. Leaving the recreation area, the creek flows through Alexander Springs Scenic Area for 7 miles before entering Alexander Springs Wilderness and flows another 3 miles into the St. Johns River.

Segment A

This segment begins at the mouth of the spring on the Ocala NF and ends at the boundary of Alexander Springs Wilderness (7 miles). It begins as a deep, clear spring from a cavernous mouth at Alexander Springs Recreation Area. The spring, gushing 60-80 million gallons daily, forms a deep, wide creek with a noticeable strong current. The creek flows through subtropical hardwood swamp for most of its journey, passing through brief areas of higher elevation where pine flatwoods dominate. Two or three large springs add their water to the creek.

River Flow—This segment is free-flowing. There are no dams, diversions, or other artificial impediments to travel.

Resource Values

Scenic. Alexander Springs Creek flows through a primarily subtropical hardwood swamp with sand pine ridges. The wideness of the creek in this segment gives the viewer a sense of openness and space. The creek is straight and gentle flowing, dotted with large clumps of aquatic vegetation. The viewer's sight distance is unrestricted for more than 150 feet. The banks are lined with dense, subtropical vegetation typical of swamps: black gum, gallberry, live oak, palm, palmetto, sand pine, and slash pine—all of which limit sight distance into the forest itself. The creek passes briefly through a pine flatwoods ecosystem where the terrain has some elevation. The viewer sees a few homesites, some with boat docks, along the bank. About ½ mile from the mouth of the spring, the creek flows under a bridge on State Highway (SH) 445. The viewer sees some sand pine ridges that are evident due to their elevation.

> *Evaluation - Common.* The viewer passes through numerous landscapes, but each landscape dominates the view for long distances. The creek's width remains constant. Plant communities are representative of the region. Curves and bends in the creek provide changing views of the landscape. Areas of higher elevations, such as sand pine ridges and pine flatwoods, provide the visitor with views of landforms typical of the area.

Recreational. Alexander Springs Creek is popular for canoeing along the first 7 miles of the creek, from the mouth of the spring to the boundary of Alexander Springs Wilderness. The spring itself has a

developed beach and is heavily used for swimming, snorkeling, and scuba diving. Canoe rentals are available. Canoes are commonly seen along this first 7-mile section. The wideness and openness of the creek, along with its straightness, require few canoeing skills. At the recreation area, a hiking trail follows close to the creek and emerges in two places onto wooden observation decks. Canoeists often view hikers in this area. Motorboats may be present, but are uncommon, and are prohibited from the bridge on SH 445 to the mouth of the spring.

After about a mile, the channel widens enough to include permanent islands of higher elevation, usually with vegetation of the pine flatwoods. These islands increase in number and size, presenting the viewer with a choice of channels and a variety of landforms to view. Floating aquatic vegetation begins to increase in quantity and eventually thickens to present a challenge to canoeists and an impediment to motorboats. Along this segment, there are three access points: the bridge at SH 445, the boat ramp on Forest Road (FR) 552, and homesites accessed by FR 538-A. Fish are present in the creek and are easily seen. Wildlife—such as alligators, deer, otters, raccoons, wading birds, and waterfowl—may be seen along the banks.

Evaluation - Common. The wideness and slow current of the creek provide a pleasant float trip that requires few canoeing skills. Aquatic vegetation and numerous islands present obstacles that challenge the canoeist to use orienteering and navigation skills. Many opportunities for hiking exist along the creek banks.

Geological/Hydrological. The water of Alexander Springs Creek originates from the Floridan aquifer and issues through a geological formation known as Ocala Limestone. Ocala Limestone underlies all of the Ocala NF. Water travels through many cavernous channels that are dissolved along joints and faults in the formation. Soils of the Ocala NF consist of a thin layer of paleodune (old dunes) sands over highly porous, permeable sand, gravel, and clayey sand that lie atop Ocala Limestone. Where limestone occurs close to the surface (150 feet or less), springs and sinkholes occur. The limestone formation can be easily seen through the clear water at the mouth of the spring. The water remains clear along this section, but the depth of the channel and the density of the aquatic vegetation sometimes obscure the stream bottom.

Evaluation - Distinctive. Alexander Springs Creek is a first-magnitude spring with exceptionally clear water. The channel bottom can be easily seen in some places, and aquatic vegetation and fish can be easily observed. The hydrology of the area is evident from the cavernous limestone caves at the mouth of the spring, numerous springs that join the creek along its length, and landforms that create the channel of the creek.

Fish and Wildlife. Wildlife species in the area of Alexander Springs Creek are those typical of the hardwood swamps, pine flatwoods, and sand pine ridges of the area. Alligators, deer, eastern wild turkeys, marsh rabbits, otters, painted turtles, raccoons, and a variety of waterfowl can be seen on the banks. Sightings of the Florida black bear are possible but infrequent. Birds typical of these wetlands are egrets, herons, ibis, limpkins, ospreys, wood ducks and, infrequently, eagles and wood storks. Saltwater species—such as mullet and stingray—can be seen.

Evaluation - Common. The viewer may see many species but the numbers are small. Each species is seen only occasionally. One or two threatened or endangered species exist in the creek corridor, and the creek links the spring with the St. Johns River and Tracy Canal.

Historical/Heritage. A heritage resource survey has not been done, but there is a moderate probability of sites along the creek. Alexander Springs Creek was a major travel route for the Timucuan Indians.

Evaluation - Minimal. This is based on known information.

Ecological. The geological processes that deposited the paleodunes over this area have resulted in a range of habitats in this area. Plant species diversity is high in the subtropical hardwood/swamp areas and high in the pine flatwoods. Predominant communities are hardwood swamps, pine flatwoods, sand pine/scrub, and wetlands.

Evaluation - Distinctive. The viewer sees most of the plant communities that are present in this region. Essential habitat for threatened and endangered species exist in the creek corridor. One endemic species, Ocala vetch (*Vicia ocalensis*), exists in the creek corridor.

Summary and Conclusions

Alexander Springs Creek is a product of the porous Ocala Limestone overlying the Floridan aquifer. As such, the spring is a free-flowing and slow-moving stream, flowing through flat terrain. It is different from other springs in the region in that it is a first-magnitude spring and flows through an area long designated as a Scenic Area. It remains in an exceptionally undisturbed state. Because of its natural conditions, this segment of the creek accurately reflects Florida's historical ecosystem.

Geological/hydrological and ecological values of Alexander Springs Creek are outstandingly remarkable from both a national and regional perspective. Having met both criteria, Segment A of Alexander Springs Creek is considered ``to be eligible for designation" to the National Wild and Scenic Rivers System.

Segment A - Potential Classification

Classification Criteria

Criteria were developed by the interdisciplinary team to help determine the potential classification of the creek. These criteria are based on those described in the Wild and Scenic Rivers Act (as amended) and the final revised guidelines for the evaluation of potential National Wild and Scenic Rivers (*Federal Register*, Vol. 47, No. 173, Tuesday September 7, 1982).

Scenic River Area—Those rivers or sections of rivers that are free of impoundments with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Criteria/Interpretation	Assessment
``Free of impoundments.'' Scenic river areas will be free of impoundments.	There are no impoundments on the creek.
``Shorelines or watersheds still largely primitive.'' To qualify for scenic classification, the river segment's shorelines and immediate environment should not show substantial evidence of human activity. The portion of the watershed within the boundary of the scenic river may have some discernible existing development. ``Largely primitive'' means that shorelines and the immediate river environment still present an overall natural character, but in places land may be developed for agricultural purposes. Row crops would be considered as meeting the test of largely primitive, as would timber harvest and other resource use, providing such activity is accomplished without a substantial adverse effect on the natural appearance of the river or its immediate environment.	As seen from the creek, most of the shoreline shows little evidence of human activity. Most of the area is a natural undisturbed forest. Row cropping and timber harvests are not occurring, and past evidence of such cannot be seen from the creek.
``Shorelines largely undeveloped'' means that any structures or concentration of structures must be limited to short reaches of the total area under consideration for designation as a scenic river area.	There are 22 recreation residences concentrated in a 37-acre area. They comprise less than 1 percent of the shoreline.
``Accessible in places by road'' means that roads may reach the river area and occasionally bridge the river. The presence of short stretches of inconspicuous and well-screened roads or railroads will not prevent scenic river designation. In addition to the physical and scenic relationship of the	There is a ½ mile of roads within the creek corridor. Only one road, SH 334, can be seen from the creek, where it bridges the creek. The SH 445 bridge, as well as the boat ramp on FR 552, occurs in the first segment of the creek before it enters the wilderness.

Criteria/Interpretation	Assessment
free-flowing river area to roads or railroads, consideration should be given to the type of use for which such roads or railroads were constructed and the type of use that would occur within the proposed scenic river area.	

Conclusion

Based on the classification criteria and the inventory of resource values associated with this segment of the creek, Segment A meets the criteria to be classified as *scenic*.

Segment B

This segment begins at the boundary of Alexander Springs Wilderness and ends at the St. Johns River (3 miles). Close to the wilderness boundary the creek enters a hardwood swamp community and the main channel deepens to become a narrow, twisting creek with the banks rising in some areas to create the channels. Here the creek changes from a wide, straight creek to a twisting, meandering channel about 25-30 feet in width. The forest canopy thickens to completely overhang the creek. Recreation residences can be seen along the bank as well as an old landing or two. The creek flows past tributaries—such as Kimball Lake, Get Out Creek, and Stagger Creek—before emptying into the St. Johns River.

River Flow—This segment is free-flowing. There are no dams, diversions, or other artificial impediments to travel.

Resource Values

Scenic. Entering into Alexander Springs Wilderness, the creek changes its character to a slow-moving, twisting, deep channel moving through a subtropical hardwood swamp community. The creek twists and turns frequently, limiting views along it to usually less than 50 feet. Sight distance into the forest is restricted by dense vegetation, consisting of cypress, black gum, gallberry, live oak, palmetto, sabal palm, and slash pine. The dense subtropical vegetation forms a canopy over the creek and creates a shaded environment. In places where the creek widens slightly, occasional shafts of sunlight penetrate to the creek. The creek continues to wind through this subtropical ecosystem and eventually enters a floodplain wetland as it nears the St. Johns River.

Evaluation - Common. The viewer sees a variety of landscapes. The twisting and turning of the creek presents a constantly changing vista. Several examples of landform can be seen along this segment: sandstone bluffs, limestone outcroppings, and springs and tributaries joining the main channel. The creek is slow moving in

places and increases in current near sharp bends.

Recreational. Alexander Springs Creek has been popular with canoeists and fishermen for many years. Wilderness designation serves to limit access at some points, yet watercraft is the most prevalent recreation use on this segment of the creek. The Florida Wilderness Act of 1983 includes an exception for the use of motorboats on Alexander Springs Creek to allow ingress and egress to the recreation residences along the creek. Currently, motorboats are used frequently to gain access for fishing. Fish are present in the creek and provide excellent fishing opportunities. Hiking opportunities are restricted because of the dense vegetation along the banks and the swampy nature of the floodplain wetlands.

Evaluation - Common. The gentleness of the current and lack of obstacles in the creek provide a pleasant float trip on this segment. The twists and turn of the creek require some navigation skills, but the single main channel eliminates the risk of getting lost and orienteering skills are not tested. The channel is kept free of fallen logs and other obstacles by the frequent motorboat traffic.

Geological/Hydrological. The water of Alexander Springs Creek originates from the Floridan aquifer and issues through the geological formation known as Ocala Limestone. Ocala Limestone underlies all of the Ocala NF. Water travels through many cavernous channels dissolved along joints and faults in the formation. Soils consist of a thin layer of paleodune (old dunes) sands over highly porous, permeable sand, gravel, and clayey sand that lie atop Ocala Limestone. Where limestone occurs close to the surface (150 feet or less), springs and sinkholes occur. Several small springs and tributaries feed into Alexander Springs Creek along this section. Get Out Creek, Stagger Creek, Kimball Lake, and Tracy Canal all feed into this section.

Evaluation - Common. The corridor contains examples of landforms representative of the region. The viewer can see Ocala Limestone along the bank, sinkholes and springs, and bluffs in the higher elevations. Water is exceptionally clear. The viewer can easily see aquatic life and, in a few places where the channel is not as deep, the channel bottom.

Fish and Wildlife. Wildlife species occurring along this segment are those typical of mixed hardwood/swamp ecosystems. Birds of prey—such as eagles, hawks, or ospreys—are seen less frequently due to the closed canopy overhanging the creek. Deer, otters, and raccoons are seen occasionally. Alligators are frequent. Birds typical of Florida's wetlands are herons, egrets, ibis, limpkins, eagles, wood ducks, and, infrequently, wood storks. Species diversity is high.

Evaluation - Distinctive. The viewer sees most of the species that are characteristic of the region. Threatened, endangered, or sensitive species are frequently observed.

Historical/Heritage. A heritage resource survey has not been done, but there is a moderate probability of sites along the creek. Alexander Springs Creek was a major travel route for the Timucuan Indians.

Evaluation - Minimal. This is based on known information.

Ecological. The geological processes that deposited the paleodunes over this area have resulted in a range of habitats. Plant species diversity is high in the subtropical hardwood swamp community and high in the pine flatwoods community. Predominant communities are mixed hardwood swamps, pine flatwoods, and wetlands.

Evaluation - Distinctive. Most of the plant communities present in the region can be seen from the creek. The creek corridor contains essential habitat for threatened and endangered species. One endemic species, the Ocala vetch (*Vicia ocalensis*), exists in the creek corridor.

Summary and Conclusions

Alexander Springs Creek is a product of the porous Ocala Limestone overlying the Floridan aquifer. As such, the spring is a free-flowing and slow-moving stream, flowing through flat terrain. As a first-magnitude spring, the volume of the creek assures its status as a primary waterway in the region and provides a wide range of wildlife habitat, attracting wildlife populations significantly larger and more diverse than rivers similar to Alexander Springs Creek. This segment flows through a designated wilderness area and has remained in an exceptionally undisturbed state.

The fish and wildlife resource value and ecological value of Alexander Springs Creek appear to be outstandingly remarkable from both a national and regional perspective. Having met both criteria, Segment B is considered ``to be eligible for designation" to the National Wild and Scenic Rivers System.

Segment B - Potential Classification

Classification Criteria

Criteria were developed by the interdisciplinary team to help determine the potential classification of the creek. These criteria are based on those described in the Wild and Scenic Rivers Act (as amended) and the final revised guidelines for the evaluation of potential National Wild and Scenic Rivers (*Federal Register*, Vol. 47, No. 173, Tuesday September 7, 1982).

Wild River Area—Those rivers or sections of rivers that are free of impoundments and usually inaccessible except by trail, with watersheds and shorelines essentially primitive and waters unpolluted. These represent the vestiges of primitive America (Wild and Scenic Rivers Act, PL 90-542).

Criteria/Interpretation	Assessment
``Free of impoundment." Wild river areas shall be free of impoundments.	There are no impoundments on the creek.
``Generally inaccessible except by trail." Wild river areas will not contain roads, railroads, or other provisions for vehicular travel within the river area. The existence of a few inconspicuous roads leading to the boundary of the river area at the time of study will not bar wild river classification.	There is a ½ mile of roads within the creek corridor. Two roads lead into the corridor to access points on the creek. Roads are not viewed from the creek. You must portage canoes from the road, which is the boundary of the wilderness.
``Watershed or shorelines essentially	There are no dwellings or structures

Criteria/Interpretation	Assessment
primitive." Wild river areas will show little evidence of human activity. Shorelines and watersheds within the river area should be essentially free of structures including buildings, dams, diversion works, generators, pipelines, power lines, pumps, rip-rap, and other modifications of the waterway or adjacent land within the river corridor. The existence of a few inconspicuous structures, particularly those of historic or cultural value, at the time of the study need not bar wild classification.	within this segment of the creek corridor. There is little or no evidence of human activity.
A limited amount of domestic livestock grazing or hay production may be considered ``essentially primitive." There should be no row crops or ongoing timber harvest and the river area should show little or no evidence of past logging activities.	Water quality exceeds Federal and State standards for aesthetics, propagation of fish and wildlife, and primary contact recreation.
``Waters unpolluted." The water quality of a wild river will meet or exceed Federal criteria or federally approved State standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the stream, and for primary contact recreation, except where exceeded by natural conditions.	Water quality exceeds Federal and State standards for aesthetics, propagation of fish and wildlife, and primary contact recreation.

Conclusion

Based on the classification criteria and the inventory of resource values associated with this segment of the creek, Segment B meets the criteria to be classified as *wild*.

ALEXANDER SPRINGS CREEK SUITABILITY STUDY

Alexander Springs Creek arises from a first-magnitude spring on the Ocala NF and flows 10 miles to empty into the St. Johns River. The spring has a daily flow of 60-80 million gallons and is a constant 72 degrees year-round. The spring is one of the Ocala NF's main attractions, and Alexander Springs Recreation Area offers a developed beach, scuba diving opportunities, canoe rentals, picnicking, hiking, and a developed campground. Leaving the recreation area, the creek flows 7 miles through Alexander Springs Scenic Area, before entering Alexander Springs Wilderness and twisting through the wilderness for 3 miles to the St. Johns River.

1. Characteristics of the river that do or do not make the area a worthy addition to the system.

Although Alexander Springs Creek is similar to other springs in the area in that its sparkling clear waters rise from the porous limestone overlying the Floridan aquifer, its uniqueness lies in the fact that it is the only first-magnitude spring in the area. As such, it creates a wide, slow-moving creek with a high volume of water. It is classed by the State of Florida as an outstanding body of water and is currently protected from certain management activities.

Alexander Springs Creek is also unique in that for its entire length, it flows through land that has long been kept in a natural state. For the first 7 miles, it flows through a special interest area called Alexander Springs Scenic Area. The area is roadless, except for the SH 445 bridge at the 1-mile mark and FR 538-A which gives access to 22 recreation residences concentrated in a 37-acre area along the creek. This area has been designated a Scenic Area since 1962. At one time this Scenic Area included the areas now known as Alexander Springs Wilderness and Billies Bay Wilderness. The creek flows through subtropical hardwood swamp for most of its journey, passing through brief areas of higher elevation where pine flatwoods dominate.

Because of its geological and hydrological significance as a first-magnitude spring, the geological and hydrological values of the creek are distinctive. Cavernous limestone caves at the mouth of the spring and many springs and sinkholes, which add their water to Alexander Springs Creek, are excellent examples of the geology of the region. The exceptionally clear water at the start of the spring allows the white sand of the channel bottom to be easily seen.

The ecological value of the creek is also rated as distinctive. The creek flows through a range of habitats. Plant diversity is high in the subtropical hardwood areas and high in the pine flatwoods. The creek contains essential habitat for some threatened and endangered species that exist in the creek corridor. Ocala vetch (*Vicia ocalensis*) is an endemic plant that grows only within the Ocala NF along Alexander Springs Creek.

In its last 3 miles, the creek flows through Alexander Springs Wilderness, designated by Congress in 1983. Wilderness designation has served to protect the natural integrity of the area. This portion of the creek offers primitive recreation and a wilderness experience.

2. Current status of landownership and use in the area, including the amount of private land involved and the uses on such land.

Except for a 40-acre privately owned parcel, currently used as a private homesite, the creek is entirely in Federal ownership. The privately owned parcel lies adjacent to Alexander Springs Wilderness. The creek flows directly through this parcel before entering the wilderness.

For the first 7 miles, the creek flows through the Alexander Springs Scenic Area. Management activities are restricted in this special interest area. The land is valued for its scenic characteristics. Uses are restricted to bird-watching, hiking, nature study, and primitive recreation. The Florida National Scenic Trail meanders along its southern border. There are 22 recreation residences along the creek, occupying 37 acres.

For the last 3 miles, the creek flows through Alexander Springs Wilderness. Current use of the area is as wilderness and is managed for the wilderness resource.

3. Reasonably foreseeable potential uses of the land and water that would be enhanced, foreclosed, or curtailed if the area were included in the system, and the values that could be foreclosed or diminished if the area is not protected as part of the system.

In the foreseeable future, potential uses of the land will remain in protected status as a special interest area and wilderness. Because of the extensive protection already afforded to these national forest lands, there are no potential uses of the land that might be foreclosed or curtailed if the area is included in the National Wild and Scenic Rivers System. The current use of the land as protected areas is deemed the highest and best use of the land.

If the area is not included in the National Wild and Scenic Rivers System, ecological, geological, hydrological, and social values of the land will remain protected through wilderness status and special interest area designation. Inclusion into the system may serve to draw more public appreciation and attention to this biologically rich area. The 40-acre parcel of privately owned land may even increase in value by virtue of having a National Wild and Scenic River flow directly through it, ensuring protection of the water quality. The private land is broken up with several landowners with hunt camps and summer homes. Most of the houses can be seen from the creek. There are boat docks located in the water adjacent to the land, and structure improvements can be seen along the creek. The private tract is unsuitable for timber production since much of it is wet and swampy. The upland part has native vegetation to accommodate shade and aesthetic values for the houses.

Because the creek is almost entirely in Federal ownership, inclusion of this creek into the system would not impact as many landowners as some of Florida's other rivers would. Designation as a National Wild and Scenic River would highlight the present outstanding values associated with the creek and serve to recognize publicly its uniqueness.

4. Public, State, and local governmental interest in designation of the river, including the extent to which the administration of the river, including costs thereof, may be shared by State and local agencies.

Currently, Florida has one National Wild and Scenic River, the Loxahatchee River in southern Florida. Because of this, there is strong public support for designation of other wild and scenic rivers. Florida Kayak and Canoe Association is the primary citizen's group lobbying hard for State and national designation of Florida's rivers. Alexander Springs Recreation Area draws a variety of users—both local, national, and international. About 3,800 people rent canoes from the concession at Alexander Springs Creek each year. It is a strong drawing card for tourists and contributes to the local economy. If the creek is designated a National Wild and Scenic River, this may serve to increase its use.

The State Department of Environmental Protection is a strong supporter of National Wild and Scenic River protection efforts, but it does not have direction or funding to conduct wild and scenic river studies. Since the State of Florida owns all the navigable waterways in the state, it would share in administration and law enforcement (LE) efforts of a designated river. Although the State legislature would determine the extent and costs, the Forest Service has limited law enforcement capabilities and relies heavily on local and State law enforcement on highways and waterways. Most of the administration efforts would fall to the Forest Service as lead agency for completing the studies. Local government involvement would be slight and would probably not share in the cost or administration.

5. Estimated cost to the United States of acquiring necessary land and interests in land and of administering the area if it is included in the system.

Since almost the entire creek flows through national forest land, there would be no additional costs of acquiring land. There are currently no plans to acquire the 40 acres of private land adjacent to the wilderness, although it would be desirable to acquire because the creek enters the wilderness directly from privately owned land. If the Forest Service were to acquire this 40 acres of land, the costs would most likely be as follows:

Value of land - 40 acres @
$10,000 per acre = **$400m**

Cost of administering the area as a wild and scenic river would be absorbed by the Seminole Ranger District's recreation program. Funds would need to be requested to cover the salary of recreation staff to perform 55 person-days of work to develop and implement a River Management Plan.

6. Other issues and concerns identified during the planning process.

Some members of the public, especially those using the recreation residences, may be concerned that wild and scenic status will result in restrictions being placed on motorboats. In the Eligibility and Classification Study, the segment of the creek in the Scenic Area where these residences are located has been classed as scenic.

This would not preclude motorized equipment from the creek and should not alter present use patterns in any way. Similarly, the current exception for motorboats in Alexander Springs Wilderness contained in the Florida Wilderness Act of 1983 will not be affected. National Wild and Scenic Status will not result in any changes to the Florida Wilderness Act or its provisions.

GS-11 @ 40 person-days to develop a River Management Plan	$8,240.00
GS-09 @ 15 person-days to implement the plan	$2,550.00
Administrative costs (signs, LE, O&M)	$2,500.00
TOTAL	$13,290.00

JUNIPER CREEK
ELIGIBILITY AND CLASSIFICATION STUDY

Juniper Creek is a clear, spring-fed creek that arises from a spring on the Ocala National Forest (NF) and flows 10 miles into Lake George. The spring has a daily flow of 8.3 million gallons and is a constant 72 degrees year-round. The spring itself is a main attraction for visitors to the Ocala NF. Juniper Springs Recreation Area centers on the developed swimming site created at the mouth of the spring. Leaving the recreation area, the creek flows for 7 miles through Juniper Prairie Wilderness. Upon leaving the wilderness, it flows another 3 miles to empty into Lake George.

Segment A

This segment begins at the mouth of the spring on the Ocala NF and ends at the bridge on State Highway (SH) 19 (7 miles). It begins as a shallow, clear-running stream about 8 to 10 feet wide, widening in places from 15 to 20 feet but maintaining an average depth of 2 to 4 feet. As it enters the wilderness, it begins to wind tortuously through lush, overhanging subtropical vegetation, eventually deepening and widening until it opens upon a marshy, prairielike environment. The creek exits the wilderness and then passes under the bridge on SH 19. There is a canoe take-out point, Juniper Wayside, at this bridge. It contains interpretive signs, a parking lot, a ramp, and sanitary facilities.

River Flow—This segment is free flowing. There are no dams, diversions, or other artificial impediments to travel.

Resource Values

Scenic. Juniper Creek flows through a variety of ecosystems. The visitor is presented with an ever-changing viewscape. The creek twists and turns constantly, limiting views to less than 30 feet. Sight distance into the forest and along the creek is restricted due to dense vegetation, consisting of black gum, cypress, gallberry, live oak, needle palm, palmetto, sabal palm, and slash pine. The viewer first experiences dense subtropical vegetation where sight distances are restricted and the forest canopy completely arches over the creek. The creek then widens and the canopy admits shafts of sunlight to the creek. The thinner canopy allows the eye to penetrate further into the forest, although the twisting of the creek itself restricts views along the water. Opening onto a marshy prairie, the creek widens to more than 200 feet but only the 8-to-10-feet-wide main channel remains free of grasses and aquatic vegetation. The creek continues through the marsh to the bridge at SH 19.

Evaluation - Distinctive. The variety of landscapes—marsh/wetland, subtropical, swamp, and mesophytic hardwood—through which the creek passes creates a constantly changing vista. The viewer sees a variety of landforms as the elevation changes. At low elevations, several small springs can be seen flowing into the creek; at higher elevations, deep fissures and caves are seen in the sandstone along the bank, and the exposed bluffs of drier ridges carry the eye upwards.

Recreational. Juniper Creek has been a popular canoe trip for many years. The shallowness of the creek and its slow-paced current encourages inexperienced and first-time canoeists, while the many sharp turns and overhanging trees contribute to the advanced canoeists' enjoyment. The visitor encounters many obstacles that must be negotiated or portaged around, presenting the visitor with risk and challenge. The single main channel eliminates the risk of getting lost, yet the wilderness designation offers opportunities for discovery and solitude. Except for a nature trail that parallels the creek in the recreation area, hiking opportunities are restricted due to dense vegetation along the banks and the swampy nature of the marsh. Fish are present in the river, but most are small panfish. The wilderness designation and inaccessibility of the area discourage fishing.

Evaluation - Common. The gentle current and shallow water present few challenges. Few canoeing skills are needed, although the twists and turns of the creek require some navigating skills. Natural obstacles, which require the canoeist to go under or portage over them, present some challenge and risk. The shallowness of the creek ensures that little danger or risk is involved.

Geological/Hydrological. The water of Juniper originates from the Floridan aquifer and issues through the geological formation known as Ocala Limestone. Ocala Limestone underlies all of the Ocala NF. Water travels through many cavernous channels that are dissolved along joints and faults in the formation. Another formation, called Hawthorne, lies atop outcrops of Ocala Limestone in a semicircle, including the area of Juniper. The rock through which Juniper boils up is part of the Hawthorne formation. Soils of the Ocala NF consist of a thin layer of paleodune (old dune) sands over highly porous, permeable sand, gravel, and clayey sand that lie atop the Ocala Limestone. Where limestone occurs close to the surface (150 feet or less), springs and sinkholes occur. Throughout its length, the creek has strikingly clear water flowing over a white sandy bottom, which in places is obscured by aquatic vegetation. Elevation is about 25 to 50 feet above mean sea level, with little fluctuation from storm runoff.

Evaluation - Common. Juniper Springs is a third-magnitude spring with exceptionally clear water. The channel bottom, aquatic vegetation, and fish can be easily observed. The viewer can observe the hydrology of the area from seeing the origin of the spring, its widening as other springs empty into it, the creation of a wetland as the creek widens into a marsh, and its subsequent channeling into Lake George.

Fish and Wildlife. Wildlife species near Juniper Creek are those encountered in hardwood swamps of the Ocala NF. They include eastern wild turkeys, Florida black bears, raccoons, and white-tailed deer. Alligators are seen frequently and are abundant in the open marsh habitat. Birds encountered are those typical of Florida's wetlands: herons, ibis, limpkins, moor hens, ospreys, wood ducks, and, infrequently, sandhill cranes and wood storks. Because the creek passes from an enclosed wooded habitat to an open marshy habitat, the diversity of wildlife is high.

Evaluation - Common. The viewer sees most of the species that are

characteristic of the region. The creek is located within the Ocala National Game Refuge.

Historical/Heritage. A heritage resource survey has not been done, but there is a low probability of sites along the creek. A few historic sites are located along the higher ground where the land begins to rise about midway along the 7-mile segment. One known prehistoric site is located along the creek.

Evaluation - Minimal. This is based on known information.

Ecological. The geological processes that deposited the paleodunes over this area have resulted in a range of habitats surrounding Juniper Creek. Plant species diversity is high, both along the creek and in habitats away from the creek. Predominant communities that can be seen from the creek are hardwood swamps, marsh, and sand pine.

Evaluation - Common. A number of the plant communities present in the region can be seen from the creek, although the landscape is dominated by two or three plant communities. Essential habitat for threatened or endangered plant species exists in the creek corridor. Two endemic plants, Florida willow (*Salix floridana*) and Ocala vetch (*Vicia ocalensis*), exist in the creek corridor.

Summary and Conclusions

Juniper Springs is a product of the porous Ocala Limestone overlying the Floridan aquifer. As such, the spring is a free-flowing and slow-moving stream, flowing through flat terrain. It differs from other springs in the region because it immediately enters a wilderness area and has thus remained in an exceptionally undisturbed state, creating excellent wildlife habitat, especially for waterfowl and deer. The subtropical flavor of the hardwood swamp ecosystem creates a unique experience even for the multifaceted Ocala NF. The variety of ecosystems through which the creek flows gives the visitor a constantly changing vista and an abundance of wildlife viewing opportunities.

The scenic value of Juniper Creek is outstandingly remarkable from both a national and regional perspective. Having met both criteria, Segment A of Juniper Creek is considered ``to be eligible for designation" to the National Wild and Scenic Rivers System.

Segment A - Potential Classification

Classification Criteria

Criteria were developed by the interdisciplinary team to help determine the potential classification of the creek. These criteria are based on those described in the Wild and Scenic Rivers Act (as amended) and the final revised guidelines for the evaluation of potential National Wild and Scenic Rivers (*Federal Register*, Vol. 47, No. 173, Tuesday September 7, 1982).

Wild River Areas—Those rivers or sections of rivers that are free of impoundments and usually inaccessible except by trail, with watersheds and shorelines essentially primitive and waters unpolluted. These represent the vestiges of primitive America (Wild and Scenic Rivers Act, PL 90-542.

Criteria/Interpretation	Assessment
``Free of impoundments.'' Wild river areas shall be free of impoundments.	There are no impoundments on the creek.
``Generally inaccessible except by trail.'' Wild river areas will not contain roads, railroads, or other provisions for vehicular travel within the river area. The existence of a few inconspicuous roads leading to the boundary of the river area at the time of study will not necessarily bar wild river classification.	There are no roads or trails within the corridor. A nature trail in Juniper Springs Recreation Area parallels the creek for about an eight of a mile but does not give access to the creek.
``Watershed or shoreline essentially primitive.'' Wild river areas will show little evidence of human activity. Shorelines and watershed within the river area should be essentially free of structures including buildings, pipelines, generators, diversion works, rip-rap, and other modifications of the waterway or adjacent land within the river corridor. The existence of a few inconspicuous structures, particularly those of historic or cultural value, at the time of the study need not bar wild classification.	There is one structure on this segment, a small canoe dock about halfway down the segment. It is inconspicuous. There is no other evidence of human activity.
A limited amount of domestic livestock grazing or hay production may be considered ``essentially primitive.'' There should be no row crops or ongoing timber harvest and the river area should show little evidence of past logging activity.	There are no grazing allotments along the creek corridor. There is no row cropping or timber harvesting occurring, and no past evidence of such activities.
``Waters unpolluted.'' The water quality of a wild river will meet or exceed Federal criteria or federally approved State standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the stream, and for primary contact recreation except where exceeded by natural conditions.	Water quality exceeds Federal and State standards for aesthetics, propagation of fish and wildlife, and primary contact recreation.

Conclusion

Based on the classification criteria and the inventory of resource values associated with this segment of the creek, Segment A meets the criteria to be classified as *wild*.

Segment B

This segment begins at the bridge on State Highway 19 at Juniper Wayside and goes 3 miles before emptying into Lake George. This part of Juniper Creek is different from the previous segment. Several minor springs contribute water to the creek, increasing its volume and flow. Here the creek channel widens and prevents the forest canopy from covering it. Much of the river is in full sunlight, and the viewer can see for some distance along the creek. The creek straightens its course slightly, increasing sight distances for the viewer. The creek remains clear, with a sandy bottom covered in places with aquatic vegetation. Motorboats of various sizes, even airboats, can be seen along the creek, with fishing and boating being primary activities. Fish are easily spotted—including eels, mullet, and stingrays, which are indigenous to the ocean.

River Flow—This segment is free-flowing. There are no dams, diversions, or other artificial impediments to travel.

Resource Values

Scenic. The creek passes through one dominant landscape, the mixed hardwood swamp, and occasionally through a marsh landscape. The viewer sees the white sandy bottom of the main channel, which averages from 8 to 10 feet in width, but the total width of the river averages about 30 feet, mostly covered in aquatic and reedy vegetation. Along the banks, dense vegetation—consisting of cypress, live oak, needle palm, palmetto, sabal palm, tupelo gum, and white cedar—limits any sight distance into the forest itself. The landscape dominates the view for long distances, and the creek widens and straightens to provide the viewer with scenic vistas of a marshy environment. In a few places, the creek widens into a large marshy area up to 200 feet across. Small springs can be seen emptying into the creek from smaller creeks along the banks. The creek retains its clarity and current.

> *Evaluation - Common.* The creek passes through one or two landscapes that dominate the view for long distances; and plant communities are representative of those in the area. Here the creek becomes swifter due to increased volume from Sweetwater Spring and many other springs, passing through scenery that is pleasant but unexceptional.

Recreational. This segment receives motorboat use by boaters coming up from Lake George. The width, smoothness, and straightness of the creek creates a pleasant but unchallenging boating experience. Hiking opportunities along the creek corridor are limited. Swimming and wading are traditional activities at Juniper Wayside, where swimmers compete with boaters, canoeists, kayakers, and tubers. Along this segment, fishing and boating are the primary activities, along with wading and bird-watching.

> *Evaluation - Common.* The creek provides a pleasant and leisure float trip requiring few canoeing skills. The

presence of other recreationists using airboats, motorboats, and float tubes creates a diversity of uses. Hiking along the banks is possible but not common, and no hiking trails have been developed.

Geological/Hydrological. The geological character of the creek is similar to that in Segment A. Numerous springs add to the volume of the creek, contributing to its current and its width.

Evaluation - Common. The creek contains examples of plant communities and landforms typical of the region. The volume and depth of the creek increases in this segment, and the channel bottom is difficult to see due to the dense aquatic vegetation.

Fish and Wildlife. Wildlife species in this segment are similar to those found is Segment A. The number of species encountered, especially birds, is the same. For those species tolerant of humans, their abundance is high (gallinules, herons, eagles, ospreys, anhingas, and alligators).

Evaluation - Distinctive. The viewer frequently sees numerous species characteristic of the region and many individuals of a species at one time. There is essential habitat for threatened or endangered species in the corridor.

This segment serves as a corridor between the spring and Lake George.

Historical/Heritage. A heritage resource survey has not been done on the creek, but there is a low probability of sites.

Evaluation - Minimal. This is based on known information.

Ecological. Plant communities along this segment of the creek include mixed hardwood swamps, marshes, and floodplain swamps.

Evaluation - Common. One or two plant communities dominate the landscape for long distances, and essential habitat for threatened or endangered species exists in the creek corridor. Two endemic species, Ocala vetch (*Vicia ocalensis*) and Florida willow (*Salix floridana*), exist in the corridor.

Summary and Conclusions

Juniper Creek is a product of the porous Ocala Limestone overlying the Floridan aquifer. As such, the spring is free-flowing and slow-moving, flowing through flat terrain. This segment differs from other rivers in the region because it has remained in an exceptionally undisturbed state by virtue of the first part of the creek flowing through a wilderness area. This segment contains excellent wildlife habitat, especially for waterfowl and aquatic animals, creating an abundance of wildlife viewing opportunities.

The fish and wildlife resource value of Juniper Creek is outstandingly remarkable

from both a national and regional perspective. Having met both criteria, Segment B of Juniper Creek is considered ``to be eligible for designation'' to the National Wild and Scenic Rivers System.

Segment B - Potential Classification

Classification Criteria

Criteria were developed by the interdisciplinary team to help determine the potential classification of the creek. These criteria are based on those described in the Wild and Scenic Rivers Act (as amended) and the final revised guidelines for the evaluation of potential National Wild and Scenic Rivers (*Federal Register*, Vol. 47, No. 173, Tuesday September 7, 1982).

Scenic River Areas—Those rivers or sections of rivers that are free of impoundments with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Criteria/Interpretation	Assessment
``Free of impoundments.'' Scenic river areas will be free of impoundments.	There are no impoundments on the creek.
``Shorelines or watersheds still largely primitive.'' To qualify for scenic classification, the river segment's shorelines and immediate environment should not show substantial evidence of human activity. The portion of the watershed within the boundary of the scenic river may have some discernible existing development. ``Largely primitive'' means that shorelines and the immediate river environment still present an overall natural character, but in places land may be developed for agricultural purposes. Row crops would be considered as meeting the test of largely primitive, as would timber harvest and other resource use, providing such activity is accomplished without a substantial adverse effect on the natural appearance of the river or its immediate environment.	There are no grazing allotments along this segment. There is no row cropping or timber harvesting occurring, and no past evidence of such activities.
``Shorelines largely undeveloped'' means that any structures or concentration of structures must be limited to short reaches of the total area under consideration for	There is one structure of historical significance within the corridor, Sweetwater Cabin, just below the wilderness boundary. It is not visible

designation as a scenic river area.

``Accessible in places by road" means that roads may reach the river area and occasionally bridge the river. The presence of short stretches of inconspicuous and well-screened roads or railroads will not prevent scenic river designation. In addition to the physical and scenic relationship of the free-flowing river area to roads or railroads, consideration should be given to the type of use for which such roads or railroads were constructed and the type of use that would occur within the proposed scenic river area.

from the creek.

There are two roads in the creek corridor, State Highway 40 and a gravel road leading to Sweetwater Cabin. Total mileage in the corridor of both roads is about half a mile. State Highway 40 bridges the river just below Sweetwater Cabin and the boundary of the wilderness. There is an access point, Juniper Wayside, at this bridge. There is no other evidence of human activity.

Summary

Based on the classification criteria and the inventory of resource values associated with this segment of the creek, Segment B meets the criteria to be classified as *scenic*.

JUNIPER CREEK SUITABILITY STUDY

Juniper Creek is a clear, spring-fed creek that arises from a spring on the Ocala National Forest and flows 10 miles into Lake George. The spring has a daily flow of 8.3 million gallons and is a constant 72 degrees year-round. The spring itself is a main attraction for visitors to the Ocala NF. Juniper Springs Recreation Area centers on the developed swimming site created at the mouth of the spring. Leaving the recreation area, the creek flows for 7 miles through Juniper Prairie Wilderness. Upon leaving the wilderness, it flows another 3 miles to empty into Lake George.

1. Characteristics of the river that do or do not make the area a worthy addition to the system.

Flowing through Juniper Prairie Wilderness, Juniper Creek already has a measure of protection as designated wilderness. This, combined with its general inaccessibility, has served to keep intact the pristine and natural-appearing condition of the river. From the springs, the creek enters a subtropical landscape rarely seen in central Florida. Cypress, gallberry, live oak, needle palm, palmetto, and sabal palm represent a historical landscape that is now quickly disappearing due to development and population pressures. The naturalness, sparkling clear water, dense vegetation, and twisting nature of the creek combine to create a sense of remoteness and wildness.

Wilderness designation has prohibited motorized or mechanical equipment on this part of the creek. This contributes to the feeling of solitude and primitiveness that characterizes the creek. The creek flows through a variety of

ecosystems—encompassing subtropical, swamp, mesophytic hardwood, and marsh/wetlands. The naturalness and integrity remain intact throughout this portion of the creek, as evidenced by the amount and variety of wildlife that can be observed—alligators, herons, ibis, ospreys, otters, raccoons, wood ducks, wood storks, and, infrequently, sandhill cranes. The classification study evaluated the scenic value and fish and wildlife value of the creek as distinctive.

The remaining 3 miles of the creek outside the wilderness is still in a natural-appearing state. Becoming wider, it still bends and curves as it winds its way to Lake George. Serving as a corridor between the spring and Lake George, the creek is habitat for several threatened and endangered species. The abundance of wildlife in this segment is even higher than the previous segment, an indicator of the health of the river system. This segment has high recreational boating and fishing use as boaters come up stream from Lake George to enjoy the scenic nature of the creek and the challenge of negotiating its twisting and turning path.

2. Current status of landownership and use in the area, including the amount of private land involved and the uses on such land.

The first 7 miles of the creek pass through the Ocala NF; this segment is entirely in Federal ownership. Current use of this area is as wilderness and is managed for the wilderness resource.

In the lower 3 miles, the creek flows pass private land on the north side; the south bank is in Forest Service ownership all the way to Lake George. Currently, the privately owned land does have evidence of timber harvesting activities, but the dense riparian vegetation screens much of the area. Potential uses of the land could be for commercial timber growing or housing development on the drier sites. However, there is no access to this property via the creek (no boat slips), there are no roads into the area at present, and heavy riparian vegetation obscures any views of the land beyond the bank.

National forest land on the south bank is included in a special interest area called Mormon Branch. A management plan has not been written for this area, but there are standards and guidelines in the *Land and Resource Management Plan for National Forests in Florida*. The area is recognized for its botanical value, having the southernmost stand of Atlantic white cedar in the nation, as well as large populations of rare and sensitive plants. There is little access into the area. Its designation as a botanical area precludes other use; again, dense riparian vegetation along the river obscures views into the area. Many motorboats and airboats come up stream from Lake George as far as the bridge on State Highway 40; fishing and sight-seeing are the main reasons. A small recreational development, Juniper Wayside, exists on the southern bank right below SH 40. This is the take-out point for canoes floating the creek through the wilderness, but it is also used heavily as a day-use area by picnickers, waders, and sunbathers.

3. Reasonably foreseeable potential uses of the land and water that would be enhanced, foreclosed, or curtailed if the area were included in the system, and the values that could be foreclosed or diminished if the area is not protected as part of the system.

For the first 7 miles of the creek in Federal ownership, potential use of the land in this area will be to remain as wilderness. In

addition, the remaining 3 miles flows by a designated special interest area, Mormon Branch. Because of the extensive protection already afforded to these national forest lands, there are no potential uses of the land that might be foreclosed or curtailed if the area is included in the National Wild and Scenic Rivers System. The current use of the land as protected areas is deemed the highest and best use of the land.

If the area is not included in the National Wild and Scenic Rivers System, botanical, ecological, and social values of the land will remain protected through wilderness status and special interest area designation. However, inclusion into the system may serve to draw more public appreciation and attention to this biologically rich area. It would also provide a further measure of protection for the last 3 miles of the creek as it flows past the private land on the north bank. The privately owned land on the north bank may even increase in value by virtue of being on a National Wild and Scenic River.

Because a large portion of the creek is in Federal ownership, inclusion of this creek into the system would not impact as many landowners as some of Florida's other rivers would. Designation would serve to recognize publicly the creek as a valuable example of a pristine river and the outstanding ecosystems it encompasses.

4. Public, State, and local governmental interest in designation of the river, including the extent to which the administration of the river, including costs thereof, may be shared by State and local agencies.

Currently, Florida has only one National Wild and Scenic River, the Loxahatchee River in southern Florida. Because of this, there is strong public support for designation of other wild and scenic rivers. The Florida Kayak and Canoe Association is the primary citizen's group lobbying hard for State and national designation of Florida's rivers. Juniper Springs Recreation Area and the canoe run down Juniper Creek draw a variety of users—local, national, and international. About 25,000 people canoe Juniper Creek run each year. The trip is advertised in travel magazines both in the United States and abroad as a chance to experience the ``real'' Florida. Marion County recognizes this as a strong tourist drawing card.

The State Department of Environmental Protection is a strong supporter of National Wild and Scenic River protection efforts, but currently it does not have direction or funding to conduct wild and scenic river studies. Since the State of Florida owns all the navigable waterways in the state, it would share in administration and law enforcement (LE) efforts of a designated river, although the State legislature would determine the extent and costs. The Forest Service has limited law enforcement capabilities and relies heavily on local and State law enforcement on highways and waterways.

Most of the administration efforts would fall to the Forest Service as lead agency for completing the studies. Local govern-ment involvement would be slight and would probably not share in the cost or administration.

5. Estimated cost to the United States of acquiring necessary land and interests in land and of administering the area if it is included in the system.

Since the first 7 miles of the creek flows through national forest land, there would be no additional cost of acquiring land. There are currently no plans to acquire the private land on the north bank of the last 3 river miles, although this land is within the proclamation boundary. Estimated purchase price of the land in the corridor would be $750,000.

Cost of administering the area as a wild and scenic river would be absorbed by the Lake George Ranger District's recreation program. Funds will need to be requested to cover the salary of recreation staff to perform 55 person-days of work to develop and implement a River Management Plan.

GS-11 @ 40 person-days to develop a River Management Plan	$8,240.00
GS-09 @ 15 person-days to implement the plan	$2,550.00
Administrative costs (signs, LE, O&M)	$2,500.00
TOTAL	**$13,290.00**

6. Other issues and concerns identified during the planning process.

Currently, airboats and motorboats come up the lower part of Juniper Creek from Lake George to the bridge at State Highway 19. Some members of the public may be concerned that National Wild and Scenic River Status will mean that motorized boats will no longer be allowed in this segment. In the Eligibility and Classification Study, this lower 3-mile segment of the creek has been classified as *scenic*. This would not preclude motorized equipment from the creek and should not alter present use patterns in any way.

NEW RIVER
ELIGIBILITY AND CLASSIFICATION STUDY

New River is a narrow, slow-moving blackwater river that winds 52 miles from its swampy headwaters on the northern edge of the Apalachicola National Forest to the Gulf of Mexico. The first half of the river lies within the Apalachicola NF and a portion of it flows through Mud Swamp/ New River Wilderness. After passing beyond the forest boundary, the river enters an area known as Tates Hell, which was intensively developed during the 1950s and 1960s for timber management purposes. The upper reaches of the river are remote, sinuous, and sometimes impassable. There are no cities or towns on the river, and the river corridor is primarily primitive.

Segment A

This segment begins near the northern end of the Apalachicola NF and ends at State Highway 65 (7 miles). For the entire 7 miles of its journey, it is narrow, tree-shrouded, and log-choked, making it virtually impassable. Forest Road 105 is the only road that crosses it. All adjacent land is in national forest ownership.

River Flow—This segment is free-flowing. There are no dams, diversions, or other artificial impediments to travel.

Resource Values

Scenic. Scenic variety along New River is a product of the gentle terrain through which it flows. Having a very low gradient, the river is shallow, narrow, braided, and meandering. As such, the scenery consists of very confined views where the eye is constrained to short narrow passages between tree-lined levees, which never rise more than a few feet above the river. black gum, myrtle-leaf holly, pond cypress, slash pine, sweet bay, and titi arch over the river, forming a tight canopy through which little light penetrates.

Evaluation - Minimal. Because of the confined views, this segment lacks scenic qualities.

Recreational. The tightly enclosed nature of this segment prevents most forms of recreation. Conditions necessary for open-water canoeing are not present. Only the most avid river orienteerers would attempt to navigate it, and even for them the success of the venture would always be in doubt. Although the Florida National Scenic Trail parallels the river for about a mile, hiking opportunities are very restricted because of the swampy nature of the terrain. Fish are present in the river but most are small panfish, which are fished from pools when the river level is low.

Evaluation - Minimal. This section of the river offers very little from a recreation standpoint and fares badly when compared with the other rivers.

Geological/Hydrological. New River flows through the Gulf Coastal Lowlands subsection, a flat, sandy, gently-sloping plain that extends seaward from the Northern Highlands to the Gulf of Mexico. Elevation ranges from about 80 feet above mean sea level near the river headwaters to sea level at the river mouth on

Ochlockonee Bay. The entire New River area is blanketed by unconsolidated marine sediments (mostly sand) that overlie a thick sequence of sedimentary rocks, which were deposited in the Apalachicola embayment. The river itself is a typical, tea-colored blackwater river that flows over a sand bottom. Aquatic plants are sparse. Few, if any, springs are present. Because most of the flow is derived from surficial sources, the river can shrivel up to a trickle in dry periods, leaving shallow pools of water.

Evaluation - Minimal. The geological characteristics of this segment are unremarkable, being similar to those of many other rivers in this physiographic region.

Fish and Wildlife. Wildlife species found near the river are those normally found in the forests of the Gulf Coastal Plain. Most prominently, they include black bears, eastern wild turkeys, marsh rabbits, raccoons, and white-tailed deer. Several red-cockaded woodpecker clusters are located within ½ mile of the river. Occasionally alligators may be seen. Waterfowl are those that favor an enclosed wooded habitat, for example, wood ducks. Because it is a small blackwater river and uplands often encroach to its very edge, the diversity of wildlife is less than that encountered on larger rivers with more diverse floodplain habitats. Neither this segment, nor the following two, serve as a major pathway for migratory species or as a connector of fragmented areas. The river is not recognized as a center of endemism.

Evaluation - Common. Waterfowl and other wildlife are seen occasionally along the river. The red-cockaded woodpecker is also present in the area. From a wildlife standpoint, this segment is similar to the headwaters of the other rivers being compared.

Historical/Heritage. Although New River has been occupied by humans for at least 12,000 years, there is little evidence of use along this segment of the river. During periods of low rainfall much of this segment dries up, making it ill-suited for any form of continuous human occupation. Heritage resource sites along this segment may be temporarily occupied resource extraction or subsistence sites.

Evaluation - Minimal. This segment has not been a center of human use. It ranks with the lessor of the other rivers being compared.

Ecological. During the millennia, the geologic processes that shaped the Gulf Coastal Lowlands created an unusually wide range of habitats in the flatwoods surrounding New River. This in turn permitted the development of a very high level of plant community diversity. Much of this diversity is found in habitats away from the river. In Segment A, predominant communities are longleaf pine-wiregrass on the sandhills. These intrude into the river corridor and floodplain swamps (Atlantic white cedar, black gum, pond cypress, slash pine, sweetbay, and titi) that are found on the wetlands adjacent to the river.

Evaluation - Common. Although this segment does not contain an unusually large number of communities, some threatened or endangered plant or rare communities may be found in the area.

Summary and Conclusions

This segment of New River contains the headwaters and intermittent streams that eventually come together to form the river. For most of this segment, the river is shallow and undefined, appearing more as a floodplain than a river. Recreation opportunities, wildlife variety, and ecosystem diversity are low compared to the habitats in the flatwoods around the river.

This segment does not have an outstandingly remarkable resource value. Therefore, it does not meet the criteria to be considered to be eligible for designation to the National Wild and Scenic Rivers System.

Segment B

This segment of the creek run from State Highway (SH) 65 south to Carr Bridge on Forest Highway (FH) 13 (6 miles).

River Flow—This segment is free-flowing. There are no dams, diversions, or impediments to river travel.

Resource Values

Scenic. There is a marked change from Segment A to Segment B after SH 65. Progressing downriver, the channel widens and deepens a little, yet is still choked with logs and overhangs. Because of the dense vegetation, views of the landscape are limited to the river banks, although there are parts where the landscape opens up and allows views into the surrounding forest. The viewer perceives the landscape as remote and relatively untouched, with specimens of extremely large trees in the canopy.

> *Evaluation - Distinctive.* Because of the dense vegetation, the viewer does not see evidence of human influence or forest management activities. Dense vegetation and closed canopy create a sense of isolation and closeness to the environment where the viewer feels a sense of the ``real'' Florida.

Recreational. This segment of the river is rarely canoed because of the narrow channel and its log-choked nature. In fact, for a large portion of the year, this segment does not carry enough water to navigate successfully a canoe down it. There are many logs to pull over and branches to squeeze under, and little time is spent canoeing. Only the most avid river orienteerers, or the unenlightened, would attempt to navigate it. Fish are present in the river but most are small panfish, which are fished from pools when the river is low.

> *Evaluation - Minimal.* This section of the river offers a very specific, primitive, orienteering experience that is sought by few. It presents elements of challenge and risk. It can be an excellent opportunity for experienced canoeists during times of high water.

Geological/Hydrological. In this segment, New River changes from an elevation of 70 feet above sea level to 50 feet before entering Mud Swamp/New River Wilderness. This change in elevation is shown by the present of sandy banks and a definite river channel. Water is a typical, tea-colored blackwater river flowing over a sand bottom. Few, if any, springs are

present, and the river can shrink during dry periods to a nonnavigable stream.

Evaluation - Minimal. The geological characteristics of this segment are similar to other rivers in this physiographic region.

Fish and Wildlife. Wildlife species in this segment of the river are those typical of the forests in the Gulf Coastal Plain. They include black bears, raccoons, eastern wild turkeys, marsh rabbits, and white-tailed deer. Several red-cockaded woodpecker clusters are located within ½ mile of the river. Occasionally, alligators may be seen. Waterfowl encountered are those that favor a canopied wooded habitat, for example, wood ducks. Because it is a small blackwater river and uplands often encroach to its very edge, the diversity of wildlife is less than that encountered on larger rivers with more diverse floodplain habitats. This segment does not serve as a major pathway for migratory species, but it does serve as a connector of undisturbed fragmented areas. This segment is not recognized as a center of endemism.

Evaluation - Common. While a variety of species may be encountered, the species are not seen in especially large numbers. There is not any particular concentration of threatened or endangered species.

Historical/Heritage. Although there has been no inventory along this segment, data from the surrounding vicinity suggest cultural resource sites along this segment may be temporarily occupied resource extraction or subsistence sites. There is one historic railroad community site near the floodplain of this segment.

Evaluation - Common. This segment has not been a center of human use. It ranks similar to Segment A.

Ecological. The communities along the river in Segment B are slash pine flatwoods and floodplain swamps. These floodplain swamps contain large specimens of Atlantic white cedar, rare in this area, as well as bay, cypress, and tupelo.

Evaluation - Distinctive. This segment contains excellent examples of floodplain species, especially Atlantic white cedar, not typically found on the forest. Essential habitat for threatened and endangered species exists in the river corridor.

Summary and Conclusions

Derived from surficial sources, New River is a slow-moving, blackwater river that passes through some of the most remote areas on the Apalachicola NF. Even before entering Mud Swamp/New River Wilderness, the river passes through some of the most undisturbed areas left in the State of Florida. The twisting and turning of the river, its remoteness, and its multiple channels present a challenge to even the most skilled canoeist, creating an experience unique to New River. The variety of landscapes and the undisturbed natural ecosystems through which it flows enhance the feelings of isolation, remoteness, and solitude.

The scenic and ecological resource values of New River are outstandingly remarkable from both a national and regional perspective. Having met this criteria, Segment B of New River is considered ``to be eligible for designation'' to the National Rivers System.

Segment B - Potential Classification

Classification Criteria

Criteria were developed by the interdisciplinary team to help determine the potential classification of the river. These criteria are based on those described in the Wild and Scenic Rivers Act (as amended) and the final revised guidelines for the evaluation of potential National Wild and Scenic Rivers (*Federal Register*, Vol. 47, No. 173, Tuesday September 7, 1982).

Scenic River Areas—Those rivers or sections of rivers that are free of impoundments with shorelines or watersheds still largely primitive and shorelines mainly undeveloped, but accessible in places by roads.

Criteria/Interpretation	Assessment
``Free of impoundments." Scenic river areas will be free of impoundments.	There are no impoundments on the creek.
``Shorelines or watersheds still largely primitive." To qualify for scenic classification, the river segment's shorelines and immediate environment should not show substantial evidence of human activity. The portion of the watershed within the boundary of the scenic river may have some discernible existing development. ``Largely primitive" means that shorelines and the immediate river environment still present an overall natural character, but in places land may be developed for agricultural purposes. Row crops would be considered as meeting the test of largely primitive, as would timber harvest and other resource use, providing such activity is accomplished without a substantial adverse effect on the natural appearance of the river or its immediate environment.	There are no grazing allotments along this segment. Past and current timber harvests and forest management activities are present but cannot be viewed from the river. The shoreline is natural and undisturbed.
``Shorelines largely undeveloped" means that any structures or concentration of structures must be limited to short reaches of the total area under consideration for designation as a	Carr Bridge on FH 13 is included in this segment. It is considered the major canoe put-in point for those canoeing Mud Swamp/New River Wilderness.

Criteria/Interpretation	Assessment
scenic river area.	
``Accessible in places by road'' means that roads may reach the river area and occasionally bridge the river. The presence of short stretches of inconspicuous and well-screened roads or railroads will not prevent scenic river designation. In addition to the physical and scenic relationship of the free-flowing river area to roads or railroads, consideration should be given to the type of use for which such roads or railroads were constructed and the type of use that would occur within the proposed scenic river area.	The river is accessible at State Highway 65 and FH 13 at Carr Bridge. A few forest development roads parallel the river but cannot be seen from the river. The river flows through a small corner of private land in T3S, R6W, Section 31 for less than ¼ mile.

Summary

Based on the classification criteria and the inventory of resource values associated with this segment of the river, Segment B meets the criteria to be classified as *scenic*.

Segment C

This segment begins at the boundary of Mud Swamp/New River Wilderness just below Carr Bridge on FH 13 to the southern boundary of the wilderness (10 miles).

From Carr Bridge to the southern boundary of the wilderness, the river gradually widens and deepens. Passage, by canoe or kayak, becomes progressively easier than in Segment B. However, even along this stretch there are many places that require skill, imagination, and persistence to get over, through, or under the tangle of trees, vines, and downed logs that periodically intrude into the river. On this lower section, access to the river is reached from Carr Bridge on FH 13 at Magnolia Landing and at the sites of the abandoned Boatwright and Owens Bridges. All of this segment is in national forest ownership.

River Flow—This segment is free-flowing. There are no dams, diversions, or impediments to river travel.

Resource Values

Scenic. The change from Segment B to Segment C is a matter of degree. Progressing downriver, the channel widens and deepens. Views of the landscape gradually expand to extend the viewer's horizon up to ¼ mile in some instances, although views are limited to the immediate vegetation on the banks. Occasionally, small lakes branch away from the main channel and provide a sense of variety. Being a greater distance from the shoreline vegetation, the viewer begins

to sense patterns in it that could not be discerned in Segment B. The last stretch of this segment contains a large cypress/tupelo swamp mixed with patches of Atlantic white cedar, which provide a visual experience different from the preceding 6 miles.

> *Evaluation - Distinctive.* From a narrow confined river to a broad, braided river plain, this segment provides a wide variety of visual images that is not encountered on other rivers in this physiographic province.

Recreational. Canoeing New River in this wilderness segment requires advanced canoeing skills. There are logs to pull over and branches to squeeze under, although this changes seasonally with the water level. During times of high water, there are stretches clear of vegetation where canoeing is easier. However, for most of the year Mud Swamp/New River offers the supreme challenge. Those who wish to enjoy uninterrupted canoeing turn back. Avid river orienteerers press on. The river begins to braid and the current slackens. Determining the correct channel becomes more and more difficult. Dead ends are frequently encountered, and without a compass orientation is next to impossible. The river seems to vanish in the swamp. For 4 miles the orienteerer must rely on skills gained from all past experiences, exercise good judgement, and fight to overcome physical exhaustion. Finally the river reforms and assumes its original character.

> *Evaluation - Distinctive.* As it winds through Mud Swamp, New River is the only river among those being compared that can provide an *African Queen*-type experience. It represents the supreme challenge for the avid river orienteerer.

Geological/Hydrological. Up to Mud Swamp, the river has the same geological/hydrological characteristics as Segment B. Mud Swamp is an anomaly. Most rivers, once formed, follow a well-defined channel for the rest of their length. In Mud Swamp, New River loses its identity for about 4 miles. This situation occasionally occurs in other Florida rivers.

> *Evaluation - Distinctive.* Although a few other rivers in Florida have situations similar to Mud Swamp, it is distinctive enough, particularly when compared to the other rivers under consideration, to warrant this designation.

Fish and Wildlife. Wildlife species in this segment of the river are similar to those found in Segment B. The difference is the presence of more species that prefer open and swampy aquatic habitat. The number of species encountered and their abundance can be considered as average. There are several red-cockaded woodpecker clusters within ½ mile of the river, all located outside of Mud Swamp Wilderness. Alligators may be seen in Mud Swamp.

> *Evaluation - Common.* While a variety of species may be encountered, the species are not seen in especially large numbers. There is not any particular concentration of threatened or endangered species.

Historical/Heritage. Previous inventories have revealed prehistoric activity in this segment as early as 12,000 years ago. Human occupation continued until historic times as shown by the presence of historic bridges, turpentine camps, mill sites, and homesites. There is one possible Paleolithic site (about 10000 B.C.) along this corridor. From 7000 B.C. to 2000 B.C.,

this segment of New River was heavily used by archaic hunters. At least one multicomponent site has been determined to be eligible for the National Register of Historic Places. It contains the remains of the first ceramic users in this part of northwest Florida. Fourteen sites have been recorded on this segment of the river.

Evaluation - Common. While there are several sites along the river, they are not present in numbers or uniqueness great enough to warrant a distinctive designation. The presence of prehistoric sites where ceramics are found may suggest more long-term seasonal occupation and resource extraction activities along this segment in comparison to Segments A and B.

Ecological. The communities along the river in Segment C are slash pine flatwoods and floodplain swamps, with the latter predominating throughout Mud Swamp. These floodplain swamps contain large specimens of Atlantic white cedar, rare in this area, as well as bay, cypress, and tupelo. This segment of the river also flows through one of the best examples of the longleaf pine-wiregrass ecosystem and thus presents a unique experience.

Evaluation - Distinctive. This segment contains excellent examples of floodplain species, especially Atlantic white cedar, not typically found on the forest. Essential habitat for threatened and endangered species exists in the river corridor.

Summary and Conclusions

Derived from surficial sources, New River is a slow-moving, blackwater river that passes through some of the most remote areas on Apalachicola NF. Entering Mud Swamp/New River Wilderness, the river passes through some of the most pristine and undisturbed wild areas left in the State of Florida. The twisting and turning of the river, its remoteness, and its multiple channels present a challenge to even the most skilled canoeist, creating an experience unique to New River. The landscape varieties and the undisturbed natural ecosystems through which it flows enhance the feelings of isolation, remoteness, and solitude.

Scenic, recreational, geological/hydrological, and ecological resource values of New River are outstandingly remarkable from both a national and regional perspective. Having met this criteria, Segment C of New River is considered ``to be eligible for designation" to the National Wild and Scenic Rivers System.

Segment C - Potential Classification

Classification Criteria

Criteria were developed by the interdisciplinary team to help determine the potential classification of the river. These criteria are based on those described in the Wild and Scenic Rivers Act (as amended) and the final revised guidelines for the evaluation of potential National Wild and Scenic Rivers (*Federal Register*, Vol. 47, No. 173, Tuesday September 7, 1982).

Wild River Areas—Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds and shorelines essentially primitive and waters unpolluted. These represent the vestiges of primitive America (Wild and Scenic Rivers Act, PL 90-542).

Criteria/Interpretation	Assessment
``Free of impoundment." Wild river areas shall be free of impoundments.	There are no impoundments on the river.
``Generally inaccessible except by trail." Wild river areas will not contain roads, railroads, or other provisions for vehicular travel within the river area. The existence of a few inconspicuous roads leading to the boundary of the river area at the time of study will not necessarily bar wild river classification.	There are no roads or trails within this segment of the corridor, although other forest roads may parallel the river for short distances but cannot be seen from the river.
``Watershed or shoreline essentially primitive." Wild river areas will show little evidence of human activity. Shorelines and watershed within the river area should be essentially free of structures including buildings, pipelines, generators, diversion works, rip-rap, and other modifications of the waterway or adjacent land within the river corridor. The existence of a few inconspicuous structures, particularly those of historic or cultural value, at the time of the study, need not bar wild classification.	There is one wooden bridge, Boatwright Bridge, that has been disconnected and evaluated for its historic significance. It spans New River where the boundaries of Mud Swamp Wilderness and New River Wilderness addition meet. There is an access point at Magnolia Landing on FR 182, which ends before entering the wilderness boundary. It is a primitive and inconspicuous landing. Most of the shoreline is in an undisturbed state, with no evidence of human activity.
A limited amount of domestic livestock grazing or hay production may be considered ``essentially primitive." There should be no row crops or ongoing timber harvest and the river area should show little or no evidence of past logging activity.	There are no grazing allotments along the river corridor. There is no row cropping or timber harvesting occurring and no past evidence of such activities.
``Waters unpolluted." The water quality of a wild river will meet or exceed Federal criteria or federally approved State standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the stream, and for primary contact recreation, except where exceeded by natural conditions.	Water quality exceeds Federal and State standards for aesthetics, propagation of fish and wildlife, and primary contact recreation.

Conclusion

Based on the classification criteria and the inventory of resource values associated with this segment of the river, Segment C meets the criteria to be classified as *wild*.

Segment D

This segment begins at the southern boundary of Mud Swamp/New River Wilderness to river mile four at the northern boundary of the town of Carrabelle (29 miles).

For 7 miles after leaving the Apalachicola NF, the river is similar in appearance, but wider, than it was just after leaving Mud Swamp. The river channel is now very well-defined and there are obvious banks. It winds tortuously between a narrow band of floodplain swamp species (black gum, cypress, and tupelo). After joining with Juniper Creek, it becomes perceptibly wider and less meandering. For the next 15 miles it flows through Tates Hell, an area formerly considered to be an impenetrable bay. Beginning in the late 1950s, the entire area was ditched, drained, roaded, and reforested with slash pine. In many places, these pine trees were planted right up to the edge of the river. In most other areas, a thin strip of floodplain swamp species lines the river bank, which rises several feet above the water's surface. About every quarter mile, ditches can be seen cutting through the banks and draining water from the surrounding plantations. As New River nears the Gulf of Mexico, extensive areas of sawgrass marsh and then juncus marsh can be seen. Between Carrabelle and the forest boundary there are two river crossings—one at Trout Creek and the other at Gully Branch (where there is a small picnic site). A few hunt camps can be seen along the way.

River Flow—This segment is free-flowing. There are no dams, diversions, or impediments to river travel.

Resource Values

Scenic. Scenery along this segment is pleasant but not diverse. Banks, 3 to 10 feet high, rise above the water and support floodplain swamp vegetation. The river meanders in a similar manner for its entire length. The current is slow moving, tea colored, and about 5-feet deep.

> *Evaluation - Minimal.* For most of its length, this segment contains very little variety.

Recreational. After leaving Mud Swamp, most of the obstacles (logs, braided channel, and overhanging vegetation) that made the preceding segments such a challenge for river orienteerers are no longer present. The river appears to be tamer and provides the opportunity for a leisurely float trip for the family. The banks do not provide exceptional opportunities for hiking and few people fish the river for the modest fish populations that exist there.

> *Evaluation - Common.* Opportunities for several types of recreation exist, but they are very average in challenge and interest.

Geological/Hydrological. This segment flows, in a sluggish manner, through a broad flat plain known as Tates Hell.

Although still a blackwater river, its sediment load has presumably increased over the years as a result of the drainage development.

Evaluation - Minimal. This segment contains no rare or unique features.

Fish and Wildlife. The number of species and their abundance is similar to that of Segment B, although black bears are reported to be particularly abundant in this area. Species common to open water (e.g., herons) may be seen in greater abundance. As the river approaches the gulf, saltwater species become noticeable in the marshes. Alligators also frequent these areas. Overall though, species numbers are similar to those found on other blackwater rivers. Few, if any, red-cockaded woodpecker clusters can be seen in the corridor.

Evaluation - Common. While a variety of species may be encountered, the species are not seen in especially large numbers. There is no particular concentration of threatened or endangered species.

Historical/Heritage. No archaeological or historical survey has ever been performed along this segment. An aboriginal burial mound, destroyed by C. B. Moore's excavations in 1902, is its only recorded site. Other aboriginal sites dating to the Deptford and Swift Creek periods (about 500 B.C. to A.D. 500) are known to exist in the southernmost area of this segment. Burial mounds may be associated with some of these sites. Enough subsistence resources are accessible along this segment to support year-round aboriginal occupations, especially when augmented by local coastal and upland trade. Trade networks are evident from the kinds of artifacts found in this vicinity. Although not confirmed, possible historic sites may be extrapolated from map place-names along this segment: ``Morgan Place,'' ``Pope Place,'' and ``Yent Place.'' Multiple old railroad trams from historic timber extraction border portions of this segment, two routes of which cross New River near Trout Creek and Gully Branch.

Evaluation - Distinctive. Although the northern extent of this segment might be considered common, the southern extent has the potential for containing a number of very significant, if not unique cultural resource sites. In the area around the confluence of Carrabelle River, Crooked River, and New River, artifacts have been found that suggest far-reaching trade existed by around A.D. 100, perhaps even earlier. Alexander incised pottery, a type common in the Tennessee River Valley, has been found near Carrabelle—as well as an effigy stone bird head pendant, formed from stone thought to originate in Georgia. Very little is known of the ceremonial practices of Florida's aboriginal populations. Therefore, burial mound sites in this area are very important for understanding these lost cultures. Cremation burials in a local mound exhibit ritualized destruction of ceramic ceremonial vessels during the burial ceremony. Few of these types of site are known from this region and unrecorded sites may exist along the southern extent of this segment.

Ecological. The communities along this segment of the river are slash pine flatwoods and floodplain swamps, with marshes making an appearance close to the gulf. These communities are common throughout the area. Overall, this segment is dominated by a small number of communities, with few threatened or endangered species. Few endemic species are present.

Evaluation - Common. This segment contains a small number of communities. Threatened and endangered species and rare communities are not encountered in great numbers.

Summary and Conclusions

In this segment New River continues its tortuous way to the gulf but now flows in a definite channel with well-defined banks. Through most of this area, the land has been extensively ditched, drained, roaded, and planted in pine plantations. New River widens and straightens where Juniper Creek flows into it. The river eventually becomes deep enough to allow small motorboats. An aboriginal burial mound and archeological evidence of trade networks indicate a potential for a large number of archeological sites along this segment.

The historical/heritage resource value of this segment of New River is outstandingly remarkable from both a national and regional perspective. Having met this criteria, Segment D of New River is considered ``to be eligible for designation" to the National Wild and Scenic Rivers System.

Segment D - Potential Classification

Classification Criteria

Criteria were developed by the interdisciplinary team to help determine the potential classification of the river. These criteria are based on those described in the Wild and Scenic Rivers Act (as amended) and the final revised guidelines for the evaluation of potential National Wild and Scenic Rivers (*Federal Register*, Vol. 47, No. 173, Tuesday September 7, 1982).

Scenic River Areas—Those rivers or sections of rivers that are free of impoundments with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Criteria/Interpretation	Assessment
``Free of impoundments." Scenic river areas will be free of impoundments.	There are no impoundments on the creek.
``Shorelines or watersheds still largely primitive." To qualify for scenic classification, the river segment's shorelines and immediate environment should not show substantial evidence of human activity. The portion of the watershed within the boundary of the scenic river may have some discernible existing development.	There are no grazing allotments along this segment. Past and current timber harvests and forest management activities are evident, but most of the creek's shoreline appears natural when viewed from the bank.

Criteria/Interpretation	Assessment
``Largely primitive" means that shoreline and the immediate river environment still present an overall natural character, but in places land may be developed for agricultural purposes. Row crops would be considered as meeting the test of largely primitive, as would timber harvest and other resource uses, providing such activity is accomplished without a substantial adverse effect on the natural appearance of the river or its immediate environment.	
``Shorelines largely undeveloped" means that any structures or concentration of structures must be limited to short reaches of the total area under consideration for designation as a scenic river area.	There is a disconnected bridge, Owens Bridge, in this segment of the river, just outside the wilderness boundary. It is of historical value, as well as recreational value to the local residents, and does not hinder traffic on the river.
``Accessible in places by road" means that roads may reach the river area and occasionally bridge the river. The presence of short stretches of inconspicuous and well-screened roads or railroads will not prevent scenic river designation. In addition to the physical and scenic relationship of the free-flowing river area to roads or railroads, consideration should be given to the type of use for which such roads or railroads were constructed and the type of use that would occur within the proposed scenic river area.	There are several dirt roads in the river corridor that give access to the river. There are two river crossings in this area—Trout Creek and Gully Branch. Both are small and inconspicuous. Most of the dirt roads this area were constructed specifically for forest management activities and are not frequently used by the public.

Summary

Based on the classification criteria and the inventory of resource values associated with this segment of the river, Segment D meets the criteria to be classified as *scenic*.

NEW RIVER
SUITABILITY STUDY

New River on the Apalachicola National Forest is a slow-moving, blackwater river that snakes its way for about 52 miles from its swamp headwaters on the northern edge of the Apalachicola Ranger District in Liberty County to the Gulf of Mexico in Franklin County. Tallahassee, the state capital, lies about 60 miles northeast. There are no cities or towns located on the river, and the river corridor is primarily primitive.

The river's headwaters occur entirely within the Apalachicola NF and much of the corridor has been in Federal ownership since the mid-1930s. The upper reaches of the river on the national forest are remote, twisty, and sometimes impassable. A portion of the corridor passes through Mud Swamp/New River Wilderness. It is only after leaving national forest boundaries that the river widens perceptibly, is less meandering, and receives more recreation use from area residents.

1. Characteristics of the river that do or do not make the area a worthy addition to the system.

The segment of New River—consisting of the headwaters—flows through pine flatwoods with many cypress, gum, bay, and titi wetlands. Although it has a wide floodplain, for most of the year it is a nonnavigable stream that does not have a readily identifiable channel. Further south, near Carr Bridge, the river widens enough to take on a definite identity and flows through a variety of swamp-type ecosystems. At this point there are impressive stands of Atlantic white cedar along the outer edge of the floodplain. Formerly common along the area's streams and floodplains, Atlantic white cedar is now rare in this area due to extensive logging. The river corridor contains outstanding examples of the natural ecosystem of this species. In addition, the area is historically a longleaf pine-wiregrass ecosystem. This segment of the river flows through one of the best examples of the longleaf pine-wiregrass community, presenting a unique experience.

Closely tied to this distinctive ecological value is the scenic quality of the river corridor. As the river widens and deepens, twisting through Mud Swamp/New River Wilderness, the viewer experiences a variety of visual images as the surrounding vegetation constantly changes with the horizon. The viewer goes from confined, narrow river channels to open, spacious landscapes as small lakes and sloughs branch away from the main channel. Towering cypress trees rising directly from the middle of the river channel carry the eye upward, presenting vertical as well as horizontal variety.

The recreational values associated with this river are reflected by the opportunities for solitude, challenge, and risk that this river offers. This river represents the supreme challenge for even the most advanced canoeist. The remoteness of the area, combined with the confusing and multiple channels the river takes through the Mud Swamp/New River area, results in the most challenging canoe experience in this region of north Florida. For most of the year, downed logs and thick vegetation present obstacles that must be portaged around, the current is slow, and the river vanishes into a swamp. It is widely recognized by local canoe enthusiasts as

the most difficult and challenging canoe experience in the area, with plenty of opportunities for risk and testing outdoor skills.

These values exemplify the challenge of experiencing the ecosystems native to this part of Florida. This virtually untouched part of north Florida grows in importance as surrounding lands are put to agricultural and rural purposes. Its uniqueness lies in this ability to let the viewer experience Florida as it once was—dangerous, beautiful, and remote.

2. Current status of landownership and use in the area, including the amount of private land involved and the uses on such land.

The first 23 miles of the river, from its headwaters to Owens Bridge, passes through the Apalachicola NF. This segment is entirely in Federal ownership. The area from the headwaters to Carr Bridge consists of general forest area where multiple-use management has been occurring—including timber harvesting, recreation, wildlife management, and prescribed burning. The segment flowing through Mud Swamp/New River Wilderness has remained in a pristine state through its protected status. Since 1994, the Forest Service has acquired 4,053 acres containing approximately 6 river miles along the western bank of the New River corridor in the part of Liberty County commonly referred to as Tates Hell. In this newly acquired area, the main uses are primitive and undeveloped recreation—such as fishing, canoeing, boating, hunting, and bird-watching. It is at this point that the river channel deepens enough to allow motorboats and sandy banks rise above eye level as the topography rises slightly. The lower 19 miles, from national forest land to the Gulf of Mexico, is on private land, as well as the eastern bank of the recently purchased 6 miles. This land, Tates Hell, was previously owned by Proctor and Gamble and managed as timberland by Buckeye Cellulose. The large tract of land comprising Tates Hell was sold to a group of investors represented by Mr. Jewel Tucker. Attempts to sell the land in small plots have been unsuccessful.

Much of the land in this privately owned section has been ditched, drained, and planted in slash pine, although the dense riverine vegetation in the river corridor shield's the viewer from the surrounding landscape. Timber management has been the sole emphasis in this section, although there has been a small amount of recreation occurring—mainly fishing, boating, picnicking, and some primitive camping.

3. Reasonably foreseeable potential uses of the land and water that would be enhanced, foreclosed, or curtailed if the area were included in the system, and the values that could be foreclosed or diminished if the area is not protected as part of the system.

Portions in Federal Ownership. For the first 33 miles of New River in Federal ownership, potential uses of the land and water will be confined to the uses specified in the *Land and Resource Management Plan for National Forests in Florida*. This would include the range of multiple-use land management concepts that the Forest Service is mandated to provide. Timber management, wildlife management, protection of threatened and endangered species, recreation, water, range, and wilderness are all foreseeable uses of national forest lands.

The first 14 miles of New River consists of the headwaters and a sinuous,

sometimes impassable, channel to the point where it enters Mud Swamp/New River Wilderness at Carr Bridge. The land in this area is general forest area in Management Areas 7 (general forest, range), 8 (general forest, nonrange), and 9 (general forest, titi). Timber harvesting, wildlife management, and dispersed recreation will occur in the foreseeable future. Sound ecosystem management will allow these uses to be sustainable and even enhance their value as the national forest increasingly becomes one of the largest areas of undeveloped land in north Florida. As New River is fed by primarily groundwater runoff, continued status of the land as a national forest will ensure protection of the watershed and water quality. The function of the headwaters segment as a watershed may be possibly its greatest value, and the potential for future protection of the water quality of the river.

The shallow, swampy, vegetated, and log-choked nature of this segment of New River does not allow for many potential uses. Its nonnavigability and seasonal water levels offer no potential for water development, irrigation, or recreation beyond fishing from a few of the deeper pools. If not protected by inclusion in the National Wild and Scenic Rivers System, the value of this segment of the river for watershed protection will remain that same. If the river does receive designation, the river corridor will have a further measure of protection from effects of nearby timber harvesting or other soil-disturbing actions.

New River enters Mud Swamp/New River Wilderness at Carr Bridge and flows approximately 13 miles through the wilderness. Potential use of the land in this area will be to remain as wilderness. Wilderness values of the area are closely related to the river since it is the only access into Mud Swamp, and the recreational use of canoeing is the primary use. Over time, these values will be enhanced as the surrounding area becomes more influenced by human activity and designated wildernesses become the last vestiges of pristine Florida ecosystems. Because New River benefits from wilderness status, there are no values that would be foreclosed or diminished, if the area is not included in the Wild and Scenic Rivers System. However, the benefits of designation would increase the values associated with New River and the wilderness by recognizing its pristine and wild nature. Designation as a National Wild and Scenic River may attract a slight increase in use to this little-known area, providing present and future generations with more opportunities to experience the challenge, risk, and solitude of north Florida's most primitive and remote areas.

When New River flows out of Mud Swamp/New River Wilderness, it flows through approximately 6 miles of the newly acquired national forest land, although the national forest land is on the western bank. Potential uses of the river in this part of the forest would include the present uses of primitive recreation as well as possibly developed recreation sites, range, and wildlife management, protection of threatened and endangered species, and timber management. The current slash pine plantations would be managed to return to the native longleaf pine-wiregrass, slash pine, and hardwood ecosystems of the area.

Portions Not in Federal Ownership. The lower 19 miles the river, from the forest boundary to the gulf, is in private ownership in an area commonly known as Tates Hell. Foreseeable potential uses of the land in Tates Hell include continued

intensive forestry/agricultural management, which would included drainage, plowing, chopping, bedding, burning, and fertilizing. In 1993 there was an attempt to divide Tates Hell into 40-acre parcels and sell them at auction, but there were no successful bidders and no parcels were sold. However, this continues to be a potential use of the land if the current owner decides to sell parts or all of the landholdings in Tates Hell. This could result in an increase in the number of private landholders along New River and possible development of boat docks, fish camps, houses, marinas, or roads. This could foreseeably lead to power line and gas line corridors crossing or paralleling the river, as well as bridges crossing the river to accommodate an increase in population. Potential uses also include diversions, dams, and impoundments to develop the water resources.

If not included in the National Wild and Scenic Rivers System, this portion of New River may lose the values associated with the current river experience—those of naturalness, primitive recreation, challenge, and risk. If the land is sold and developed, the naturalness of the river will be diminished as human activity increases. There would be more evidence of human activity seen from the river corridor, reducing opportunities for solitude.

While scenic qualities may be preserved through visual resource management, there would be a trade-off in water quality as agricultural or rural/urban activities increased. Currently the water quality of New River is high, even considering the forestry management activities occurring in Tates Hell. Also, the oyster and shellfish industry in the Gulf of Mexico depend on the quality of the waters flowing into the gulf. Increased development along New River could impact this industry.

4. **Public, State, and local governmental interest in designation of the river, including the extent to which the administration of the river, including costs thereof, may be shared by State and local agencies.**

Since Florida currently has only one National Wild and Scenic River, the Loxahatchee River in southeast Florida, there is strong public support for designation of other wild and scenic rivers. Florida Kayak and Canoe Association is the primary

citizen's group lobbying hard for State and national designation of Florida's rivers. Local canoe enthusiasts are adamant about the challenge, risk, and wildness of the upper section of New River, and motorboat users and local residents on the lower section prefer to keep the river and its environs as it presently exists.

The State Department of Environmental Protection is a strong supporter of national wild and scenic river protection efforts. Currently it does not have direction or funding to conduct wild and scenic river studies. Since the State of Florida owns all navigable waterways in the state, it would share in administration and law enforcement (LE) efforts of a designated river, although the State legislature would determine the extent and costs. The brunt of the administration efforts would fall on the Forest Service as lead agency for completing the studies. Local government involvement would be slight. Due to the rural nature of Liberty County, it would not likely share in any costs or administration.

5. Estimated cost to the United States of acquiring necessary land and interests in land and of administering the area if it is included in the system.

Since more than half of the 52 miles of New River are currently on national forest land, there would be no cost of acquiring land along these river miles.

Cost of administering the area as a wild and scenic river would be absorbed by the Apalachicola RD's recreation program. Funds will need to be requested to cover the salary of a recreation staff person to perform 55 person-days of work to develop and implement a River Management Plan.

GS-11 @ 40 person-days to develop a River Management Plan	$8,240.00
GS-09 @ 15 person-days to implement the plan	$2,550.00
Administrative costs (signs, LE, O&M)	$2,500.00
TOTAL	**$13,290.00**

6. Other issues and concerns identified during the planning process.

A management concern to the Forest Service is the effect that designation might have on efforts to management the newly acquired Tates Hell tract. Management goals to convert off-site slash pine back to longleaf pine will require some harvesting, including clearcutting, selection, and thinning.

OCHLOCKONEE RIVER
ELIGIBILITY AND CLASSIFICATION STUDY

Ochlockonee River is one of the longest rivers in north Florida. It begins as an alluvial river in Worth County, Georgia, flows for 85 miles before entering Lake Talquin. It then continues as a blackwater river until it empties into Ochlockonee Bay, 59 miles to the south. Federal regulations require that Jackson Bluff Dam on Lake Talquin, managed by the city of Tallahassee, release the same amount of flow that enters the lake daily. Therefore, the dam has no significant effect on the natural flow and water characteristics of the river. The portion that is being evaluated as a wild and scenic river begins 2 miles below the dam on Lake Talquin and ends at Ochlockonee Bay. Sometimes meandering, sometimes straight, it varies in width from 50 feet in the upper reaches to 1,000 feet near the bay. Along the way there are two highway crossings (Forest Highway 13 and U.S. Highway 319) and about 20 river access points. About half of the river frontage is in national forest ownership, with the remaining frontage divided between private forest industrial owners and small private landowners. There is very little development in the river corridor, most of it consisting of modest cabins.

River Flow—This portion of the river begins 2 miles below Jackson Bluff Dam on Lake Talquin and is free-flowing to the Gulf of Mexico. There are no dams, diversions, or other artificial impediments to travel.

Resource Values

Scenic. The river contains scenery representative of the landscape through which it flows. Most of the variety results from the river's changing horizontal vistas. These alternate between short, narrow passages bordered by overhanging trees to broad straight stretches, a mile or more in length. Vertical vistas are seldom encountered, since the river usually meanders back and forth within its floodplain without brushing against the adjoining bluffs. Within the river, shifting white sand bars provide a sharp color contrast to the dark tea-colored water. The river itself displays a placid appearance, moving silently between banks that may be up to 10 feet high. Occasionally, islands appear and interrupt the continuity of the river scene. Along the shore large oaks, tupelos, cypress, spruce pine, and other species characteristic of floodplain forests intermingle. Overall, the scenery is understated, as opposed to dramatic.

> *Evaluation - Common.* The variety of landscapes is moderate and, while pleasant, the views are not dramatic. One landform predominates over most of the river's length. The appearance of vegetation tends to be subdued.

Recreational. During periods of normal rainfall, the river channel is wide and deep enough to provide a pleasant float trip. Few canoeing skills are needed because of the slow-moving current and the absence of obstacles in the river. Orienteerers wanting a challenge will not find it here. Although opportunities for hiking exist along the river, most of the area lies within the floodplain. During flood periods it would be unsuitable for hiking. Ochlockonee River offers some of the best fishing of any river in the state. Trophy-size largemouth bass and bream are not uncommon. Supplies of these fish

are replenished when the gates on Jackson Bluff Dam are opened. The result is a fishing experience that can be found in few other rivers.

Evaluation - Distinctive. Canoeing, hiking, and river orienteering on this river tend to be rather average. However, one recreation experience alone makes Ochlockonee River stand out— its high-quality sport fishery.

Geological/Hydrological. Within Florida, Ochlockonee River flows off the Northern Highlands subsection onto the Gulf Coastal Lowlands. Limestone bedrock is exposed in only a few locations, below the dam at Rock Bluff and along the lower reaches, not far from Ochlockonee Bay. Other than that, the river flows through swamps and poorly drained flatwoods, typical of the Gulf Coastal Lowlands. At several locations along the corridor (extending several miles below Forest Highway 13), unusual formations known as steephead ravines can be seen cutting their way into the deep sands east of the river. Although Ochlockonee River begins in Georgia as an alluvial river, much of its sediment load is dropped in Lake Talquin. After leaving the lake, Ochlockonee River becomes a typical blackwater river.

Evaluation - Common. While Ochlockonee River contains steephead ravines that are found in few other places, Apalachicola River contains the best examples of these ravines. Other than the ravines, Ochlockonee River contains few other geological/hydrological features that are especially noteworthy.

Fish and Wildlife. Ochlockonee River contains a greater variety of wildlife than occurs along most rivers in north Florida, including many threatened, endangered, and sensitive species. These species include alligator snapping turtles, bald eagles, Florida pine snakes, gopher tortoises, red-cockaded woodpeckers, and suwannee cooters. Alligators, Florida black bears, eastern wild turkeys, raccoons, and white-tailed deer may be spotted in the dense vegetation along its banks. Frequent avian residents include egrets, herons, ospreys, white ibis, and wood ducks. Occasionally, bald eagles, wood storks, or Mississippi kites may be seen. As the river nears the Gulf of Mexico, yellowlegs, willets, sandpipers, and pelicans appear in the flats and marshes. Although well known for its sport fishery, Ochlockonee River is one of only two locations where suwannee bass, a sensitive species, is found. Also, near the gulf, the gulf sturgeon—a threatened species—has been reported.

Evaluation - Distinctive. To the river traveler, the great variety of wildlife species is immediately obvious and the viewer seems to ``kick up'' or bump into these species frequently. The presence of gulf sturgeon and suwannee bass indicates that the habitat is in a healthy state.

Historical/Heritage. Although little archeological research has been done along the banks of the Ochlockonee River, the area may hold sites as old as 12,000 years. Most of the sites that have been recorded along this river date from the archaic cultural period, 7000 to 1000 B.C. At least one site from this cultural period has been determined eligible for the National Register of Historic Places. This multicomponent site contains cultural remains of the first ceramic users in this part of northwest Florida. The introduction of ceramics around 2000 B.C. was a very significant event in the prehistory of the southeastern United States. Like much of the forest area, there is a gap in the cultural record along this river from about A.D. 1500 to early 19th century. Although this major river was surely used for

fishing, hunting, and transportation, there has been no archeological evidence found to date of the Leon-Jefferson, Seminole, Spanish, or British periods in Florida.

Evaluation - Common. There are few multicomponent sites and at least one site that is eligible for National Register of Historic Places. To date there is no evidence of atypical clustering of sites.

Ecological. As would be expected, floodplain wetland communities dominate vegetation in the river corridor. Primary among these are floodplain and bottomland forests and floodplain swamps. Where bluffs intrude on the river, upland hardwood forests make their appearance. Further south, there are mesic flatwoods. Near the coast, tidal marshes assume a major role. In total, these communities are typical of those that occur along blackwater rivers. The width of the floodplain precludes many communities that occur on upland sites in the general vicinity of the river. At the same time, few threatened and endangered plants are found here, and there are no known rare communities. While the uplands west of the river are a regional center of endemism, the area within the river corridor is not.

Evaluation - Common. While most of the communities along the river have a natural origin, the number of communities that may be seen is average for the Florida Coastal Lowlands.

Summary and Conclusions

Ochlockonee River, where it flows out of Lake Talquin, is a slow-moving, blackwater river flowing through a few areas of exposed limestone bedrock and extensive areas of swamps and poorly drained flatwoods. Although there are several access points along the river, most of it remains in a natural condition, with very little development in the river corridor. The river offers excellent fishing opportunities and contains a greater variety of wildlife than most rivers in north Florida, creating an abundance of wildlife viewing opportunities.

Recreational resource and fish and wildlife resource values of Ochlockonee River are outstandingly remarkable from both national and regional perspectives. Having met both criteria, Ochlockonee River is considered ``to be eligible for designation'' to the National Wild and Scenic Rivers System.

Potential Classification

Classification Criteria

Criteria were developed by the interdisciplinary team to help determine the potential classification of Ochlockonee River. These criteria are based on those described in the Wild and Scenic Rivers Act (as amended) and the final revised guidelines for the evaluation of potential National Wild and Scenic Rivers (*Federal Register*, Vol. 47, No. 173, Tuesday September 7, 1982).

Scenic River Areas—Those rivers or sections of rivers that are free of impoundments with shorelines or

watersheds still mainly primitive and shorelines largely undeveloped, but accessible in places by roads.

Criteria/Interpretation	Assessment
``Free of impoundments." Scenic river areas will be free of impoundments.	There are no impoundments on the creek.
``Shorelines or watersheds still largely primitive." To qualify for scenic classification, the river segment's shorelines and immediate environment should not show substantial evidence of human activity. The portion of the watershed within the boundary of the scenic river may have some discernible existing development. ``Largely primitive" means that shorelines and the immediate river environment still present an overall natural character, but in places land may be developed for agricultural purposes. Row crops would be considered as meeting the test of largely primitive, as would timber harvest and other resource use, providing such activity is accomplished without a substantial adverse effect on the natural appearance of the river or its immediate environment.	There are no grazing allotments along the river. Some past and current timber harvest areas occur, but the shoreline and river corridor still present a largely primitive character.
``Shorelines largely undeveloped" means that any structures or concentration of structures must be limited to short reaches of the total area under consideration for designation as a scenic river area.	Dispersed dwellings and small communities exist within the corridor. Most of the shoreline shows little evidence of human activity.
``Accessible in places by road" means that roads may reach the river area and occasionally bridge the river. The presence of short stretches of inconspicuous and well-screened roads or railroads will not prevent scenic river designation. In addition to the physical and scenic relationship of the free-flowing river area to roads or railroads, consideration should be given to the type of use for which such roads or railroads were constructed and the type of use that would	There are nine river access points, the majority of them are small dirt roads. Two highway bridges cross the river, FH 13 and U.S. Highway 319. In addition, there are some dirt roads on private land leading to the river. However, these roads and access points appear as very short stretches and—except for two bridges—are, for the most part, inconspicuous.

occur within the proposed scenic river area.

Summary

Based on the classification criteria and the inventory of resource values associated with this river, Ochlockonee River meets the criteria to be classified as *scenic*.

OCHLOCKONEE RIVER SUITABILITY STUDY

Ochlockonee River has its beginning in south Georgia, flowing 85 miles to Lake Talquin on Tallahassee's west side. Once pass Jackson Bluff Dam, the river flows another 59 miles south to Ochlockonee Bay. It is this southern portion of the river that is being studied for suitability as a National Wild and Scenic River. The river is the boundary between the Wakulla and Apalachicola RDs of the Apalachicola NF, and about 50 percent of the land is in Federal ownership. The meandering river varies in width from 50 feet in the upper reaches to 1,000 feet as it empties into Ochlockonee Bay. Along its 59 mile length, two highways bridge the river. There are about 20 access points, most of them primitive or undeveloped. On the privately owned land along the river, there are few developments other than home and modest cabins.

1. Characteristics of the river that do or do not make the area a worthy addition to the system.

Ochlockonee River is a magnet for boating enthusiasts, fishermen, and canoeists. The recreational value of this river is extremely high. Well known in the panhandle region for its sports fishery, the variety of wildlife that can be observed along the river is rated as a distinctive value of the river. Its proximity to Tallahassee and its accessibility from landings on national forest land and privately owned land, the landing at Ochlockonee River State Park, and the bay itself make it a favorite destination.

Its meandering nature provides a constantly changing view of the floodplain wetland communities in the river corridor. Bottomland forests, floodplain swamps, upland hardwood forests, and, closer to the bay, tidal marshes offer a variety of fishing and scenic opportunities. Bluffs along the upper reaches reveal limestone bedrock, and steephead ravines cutting into the deep sands of the area provide topographic relief not found along the smaller rivers in the region. The topography of the area and proximity to the river created ideal conditions for Native American populations. The corridor contains both historic and prehistoric sites, some dating back to 7,000 years ago, including one site eligible for the National Register of Historic Places where evidence of the first ceramic users in northwest Florida was found.

Although about half of the river corridor is in Forest Service ownership, the river does not flow through any wilderness areas, special interest areas, or other lands with protected status. Within the current Forest Plan, direction for management of the river corridor is to protect the river and adjacent lands within ¼ mile of each bank

from activities that would depreciate the river's wild, scenic, or recreational attributes. The river corridor has remained in a predominantly natural condition with little development in the river corridor.

The U.S. Fish and Wildlife Service owns about 7½ miles of the eastern bank of Ochlockonee River in St. Marks National Wildlife Refuge. This land is in the 1,250-acre Thomas Island Wilderness. The congressionally designated status of this wilderness area assures protection for the eastern bank of the river corridor.

2. Current status of landownership and use in the area, including the amount of private land involved and the uses on such land.

Florida Rivers Assessment states Ochlockonee River's intended use is recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

In the river corridor, about 50 percent of the land is in Federal ownership and the rest is privately held. The Forest Service owns a total of 31 miles of the east bank and 19 miles of the west bank. This land is currently managed as Management Area 8, general forest nonrange. These lands contain longleaf/slash pine and bottomland hardwoods and are managed for multiple use including timber production. Because of the recreational opportunities along the river, and because Ochlockonee River is one of five rivers designated to be studied for wild and scenic status, the current Forest Plan direction is to protect streams and adjacent lands within a quarter of a mile of each bank from activities that would depreciate the streams' wild, scenic, or recreational attributes. About 7½ miles of the east bank is in U.S. Fish and Wildlife Service ownership and consists of wetlands and tidal marsh. This land is protected as federally designated wilderness and managed for the wilderness resource.

Current recreational uses include bird-watching, boating, camping, canoeing, fishing, hiking, hunting, and nature study. The Florida National Scenic Trail crosses the river along the bridge on FH 13. The State Department of Environmental Protection has designated more than 50 miles of Ochlockonee River as the Ochlockonee River Canoe Trail. The recreational emphasis in the area is on primitive or undeveloped recreation.

Approximately 50 percent of the river corridor is in private ownership, usually in small parcels owned by private individuals. As it nears the bay, a small portion of the river flows through the area in Franklin County known as Tates Hell. Some portions of this between Ochlockonee River and Crooked River are held by a single landowner who bought the land from Proctor and Gamble. On private land within the river corridor, there are dispersed dwellings and small communities. Many of these have small wooden docks or boat access points from private roads. There are a few commercially owned recreation sites along the river consisting of landings, fish camps, boat ramps, and marinas.

Ochlockonee River State Park is located on the eastern bank of the river a few miles south of the Apalachicola NF. The park contains only 392 acres. Therefore, it has a minimal amount of landownership in the corridor but is a major access point for the river. The park is a developed recreation site with 30 campsites and a boat-launch facility.

The Florida Rivers Assessment characterizes the river corridor as being

composed of recreation and conservation lands, citing the Apalachicola NF, St. Marks National Wildlife Refuge, and Ochlockonee River State Park. However, as described earlier, for the Apalachicola NF, the Forest Plan does not provide any special protection or management for the river corridor other than protection during the study period. Near the bay, there is the Apalachicola Wildlife Management Area. It provides hunting for deer, turkey, and small game.

3. **Reasonably foreseeable potential uses of the land and water that would be enhanced, foreclosed, or curtailed if the area were included in the system, and the values that could be foreclosed or diminished if the area is not protected as part of the system.**

For the portion of the river corridor in Federal ownership, potential uses of land and water could include continued management of the area in multiple-use including timber production. The area currently is classified as roaded natural in the Recreation Opportunity Spectrum. This would allow for additional recreational development such as boat ramps, campgrounds, hiking trails, and picnic areas. If the area is not included in the system after the studies required by the Forest Plan have been completed, the protection afforded this pending river study would be obsolete. The above recreational developments could occur, which may result in a change in the character of the river as more developments are seen along the shoreline. The present natural-appearing condition of the shoreline would be diminished. In addition, without the current Forest Plan direction to protect study rivers to preserve their wild and scenic potential during the study process, other management activities such as fisheries improvements, timber harvest, and wildlife habitat improvements could occur. For St. Marks National Wildlife Refuge, potential use of the land will be to continue in wilderness status.

If the area is not included as part of the system, developments exceeding the criteria for ``scenic'' or ``recreational'' wild and scenic river classification could continue on private land. Additional houses, boat docks, roads, and landings could be created and be seen from the river. Additional fish camps, canoe rental operations, or other commercial establishments would be allowed to exceed the criteria to qualify as a wild and scenic river. Potential sources of water pollution—such as home septic tanks, motorized watercraft, and runoff from construction—would increase.

Although the current water quality of the Ochlockonee River is good, it may be affected by Telogia Creek, one of its major tributaries. Telogia Creek has displayed severe nutrient and dissolved oxygen problems in the past due to the wastewater treatment plant at Gretna. Problems with water quality due to point-source pollution may increase as development and residential areas increase along the river. The primary source of pollution in this segment of Ochlockonee River is due to silvicultural runoff from forest management activities. If included in the National Wild and Scenic Rivers System, management of the river corridor would require reducing or mitigating these impacts from pollution.

As the river nears Ochlockonee Bay, the land becomes tidal marsh and wetlands, feeding into the productive estuary of the bay. Development along the river corridor could adversely impact this wetland eco-system. The Ochlockonee River contains a greater variety of wildlife than

occurs along most rivers in north Florida, including many threatened, endangered, and sensitive species. The Ochlockonee River is one of only two locations where the suwannee bass, a sensitive species, is found. The gulf sturgeon, a threatened species, has been reported in Ochlockonee Bay near the Gulf of Mexico. Other threatened and endangered species include alligator snapping turtles, bald eagles, Florida pine snakes, gopher tortoises, red-cockaded woodpeckers, and suwannee cooters. If the river is not included in the National Wild and Scenic Rivers System, wetlands and threatened and endangered species of the Ochlockonee River system would lose what measure of protection its study status now affords. The value assigned to these natural areas would be diminished as development increases and the naturalness of the area would be lost.

There are potential economic uses of the land that would be affected if the area were included in the system. The economic benefits from timber production, including the 25 percent of revenues that go to the counties, may be reduced slightly by restrictions in the type of timber harvesting that would occur in the corridor. Although row crops such as tree plantations may occur in the corridor, mitigation of silvicultural runoff may reduce or eliminate the practice of clearcutting in the corridor. Increased production of wildlife and fish produced by wildlife habitat improvements and fisheries improvements in the area could continue, although the current high productivity of the area indicates that any gains from improvements would be small.

There also may be economic value associated with landownership if Ochlockonee River is designated a National Wild and Scenic River. Private land along the river may increase in value as the area stays in a natural condition while other rivers in the region become more developed.

4. Public, State, and local government interest in designation of the river, including the extent to which the administration of the river, including costs thereof, may be shared by State and local agencies.

Currently, Florida has only one National Wild and Scenic River, the Loxahatchee River in southern Florida. Because of this, there is strong public support for designation of other wild and scenic rivers. Florida Kayak and Canoe Association is the primary citizen's group lobbying hard for State and national designation of Florida's rivers.

The State of Florida has designated Ochlockonee River as an Outstanding Florida Water and a Special Water. Designation as an Outstanding Florida Water allows for no degradation of water quality at the time of designation. However, enforcing this has been difficult for the State. The State Department of Environmental Protection is a strong supporter of National Wild and Scenic River protection efforts, but currently it does not have direction or funding to conduct wild and scenic river studies. Since the State of Florida owns all the navigable waterways in the state, they would share in administration and law enforcement efforts of a designated river, although the State legislature would determine the extend and costs. As the lead agency for completing the river study, the Forest Service would have the majority of the responsibility for administration, although St. Marks National Wildlife Refuge would undoubtedly share in this effort. Local government participation

would be slight and would probably not share in the cost or administration.

5. Estimated cost to the United States of acquiring necessary land and interests in land and of administering the area if it is included in the system.

A significant portion of the river corridor is already in Federal ownership. The private land along Ochlockonee River that is within the national forest proclamation boundary would be desirable additions to the forest. The Forest Service pursues these acquisition opportunities as funds allow. Both the Forest Service and the U.S. Fish and Wildlife Service have plans to acquire more acreage along the river south of the forest. Private land along Ochlockonee River is highly valued and may be difficult to purchase. Purchasing these lands is not critical to proceeding with seeking wild and scenic designation and should not pose an insurmountable problem for administering the area.

Cost of administering the area as a wild and scenic river would be absorbed by Apalachicola NF's recreation program, although funds will need to be requested for administering the river. Because of the high number of private landowners along the river and the potential for controversy over the possibility of designation, the forest will need to make a significant investment for developing and implementing a management plan using public involvement. Funds will be necessary for salary for a River Management Specialist or for special training for a district Recreation Planner, for a substantial public involvement process similar to the Limits of Acceptable Change process, and for the implementation of the River Management Plan.

Cost to the forest or district staff would include a GS-11 Recreation Specialist/Planner to plan and conduct the public involvement process, write the management plan, and supervise the implementation of the plan. This is estimated at 120 person-days at $18.27 per hour. Salary for a GS-7/9

recreation staff person to implement the management plan is estimated at 40 person-days at $13.63 per hour. Administrative costs include expenses of conducting the public involvement process, including 2 public meetings, 5-6 task group meetings, signs, law enforcement, and regular operations and maintenance.

6. Other issues and concerns identified during the planning process.

a. Concerns of private landowners that there will be increased restrictions on size, type, and location of homes, buildings, or decks/boat docks they plan on their land.

b. Local counties' loss of revenue from timber sales.

GS-11 @ 120 person-days to develop a River Management Plan	$17,539.20
GS-7/9 @ 40 person-days to implement the plan	$4,361.60
Administrative costs (signs, LE, O&M)	$2,500.00
TOTAL	**$24,400.80**

APPENDIX E

Proposed, Endangered, and Threatened Species on National Forests in Florida

Table E.1 lists the proposed, threatened, or endangered (PET) species that occur on the national forests in Florida along with their Federal status (whether or not a recovery plan has been written), ranger district(s) of occurrence, and the habitat association were the species is most commonly found. PET species are listed by the U.S. Fish and Wildlife Service. The proposed, threatened, or endangered species list includes 13 endangered, 11 threatened, 1 proposed threatened, 1 candidate, and 1 species threatened due to similarity of appearance.

Table E.1

Proposed, Endangered, and Threatened Species

Scientific Name/Common Name	Federal Status*	Recovery Plan	Ranger District	Habitat Association
Animals				
Birds				
Aphelocoma coerulescens/Florida Scrub-Jay	T	Yes	Lake George, Seminole	Scrub
Haliaeetus leucocephalus/Bald Eagle	T	Yes	All	Aquatic
Mycteria americana/Wood Stork	E	Yes	All	Forested Wetlands
Picoides borealis/Red-cockaded Woodpecker	E	Yes	All	Forested Uplands (except Scrub)
Fish				
Acipenser oxyrinchus desotoi/Gulf Sturgeon	T	Yes	Apalachicola, Wakulla	Aquatic
Reptiles				
Alligator mississippiensis/American Alligator	TSA	Yes	All	Aquatic
Drymarchon corais couperi/Eastern Indigo Snake	T	Yes	All	Forested Uplands
Neoseps reynoldsi/Sand Skink	T	Yes	Lake George, Seminole	Scrub
Amphibians				
Ambystoma cingulatum/Flatwoods Salamander	PT		Apalachicola, Osceola	Strand, Basin, and Dome Swamps

***Federal Status:** T - Threatened E - Endangered TSA - Threatened/Similarity of Appearance PT - Proposed Threatened

Table E.1 (cont.)

Scientific Name/Common Name	Federal Status*	Recovery Plan	Ranger District	Habitat Association
Mammals				
Felis concolor coryi/Florida Panther	E	Yes	Lake George, Seminole	Forestwide
Myotis grisescens/Gray Bat	E	Yes	Osceola, Wakulla	Cave
Trichechus manatus latirostris/Florida Manatee aka West Indian Manatee	E	Yes	Apalachicola, Lake George, Wakulla	Aquatic
Ursus americanus floridanus/Florida Black Bear	C	No	All	Forestwide
Mollusks				
Ambla neislerii/Fat Three-Ridge Mussel	E	No	Apalachicola	Aquatic
Elliptoideus sloatianus/Purple Bankclimber Mussel	T	No	Apalachicola, Wakulla	Aquatic
*Lampsilis subangulatal*Shiny-Rayed Pocketbook	E	No	Apalachicola, Wakulla	Aquatic
Medionidus penicillatus/Gulf Moccasinshell	E	No	Apalachicola	Aquatic
*Medionidus simpsonianus/*Ochlockonee Moccasinshell	E	No	Wakulla	Aquatic
*Pleurobema pyriforme/*Oval Pigtoe	E	No	Apalachicola, Wakulla	Aquatic
Plants				
Bonamia grandiflora/Florida Bonamia	T	Yes	Lake George, Seminole	Scrub
Conradina glabra/Apalachicola Rosemary	E	Yes	Apalachicola**	Sandhill and Scrubby Flatwoods
Eriogonum longifolium var. *gnaphalifolium*/Scrub Buckwheat	T	No	Seminole	Scrub
Harperocallis flava/Harper's Beauty	E	Yes	Apalachicola	Unforested Wetlands
Macbridea alba/White Birds-in-a-Nest	T	Yes	Apalachicola	Mesic Flatwoods and Wet Flatwoods
Pinguicula ionantha/Godfrey's Butterwort	T	Yes	Apalachicola	Unforested Wetlands
Polygala lewtonii/Small Lewton's Milkwort	E	No	Lake George	Scrub
Scutellaria floridana/Florida Skullcap	T	Yes	Apalachicola	Mesic Flatwoods and Wet Flatwoods

***Federal Status:** E - Endangered C - Candidate T - Threatened

**Not actually found on the Apalachicola NF, but its Recovery Plan directs us to look for it there.

Sensitive Species on National Forests in Florida

Table E.2 lists the sensitive species that occur on the national forests in Florida along with ranger district(s) of occurrence, and the habitat association were the species is most commonly found. Sensitive species are listed by the Regional Forester because of concerns over population viability. The sensitive species list includes 4 mammals, 2 birds, 7 reptiles, 2 amphibians, 2 fishes, 2 mollusks, 3 crustaceans, 3 insects, and 85 plants species.

Table E.2

Sensitive Species on National Forests in Florida

Scientific Name/Common Name	Ranger District	Habitat Association
Mammals - 4 Species		
Mustela frenata peninsulae/Florida Long-tailed Weasel	Seminole	Forested Uplands
Neofiber alleni/Round-tailed Muskrat	All	Aquatic
Podomys floridanus/Florida Mouse	Lake George, Osceola, Seminole	Scrub
Sciurus niger shermani/Sherman's Fox Squirrel	Lake George, Osceola, Seminole	Forested Uplands
Birds - 2 Species		
Aimophila aestivalis/Bachman's Sparrow	All	Forested Uplands
Grus canadensis pratensis/Florida Sandhill Crane	Lake George, Seminole, Osceola	Unforested Wetlands
Reptiles - 7 Species		
Gopherus polyphemus/Gopher Tortoise	All	Forested Uplands
Graptemys barbouri/Barbour's Map Turtle	Apalachicola	Aquatic
Lampropeltis getulus goini/Apalachicola King Snake	Apalachicola	Forested Wetlands
Pituophis melanoleucus mugitus/Florida Pine Snake	All	Sandhill & Scrubby Flatwoods
Pseudemys concinna suwanniensis/Suwannii Cooter Turtle	Apalachicola, Wakulla	Aquatic
Sceloporus woodi/Florida Scrub Lizard	Lake George, Seminole	Scrub
Stilosoma extenuatum/Short-tailed Snake	Lake George, Osceola, Seminole	Scrub
Amphibians - 2 Species		
Notopthalmus perstriatus/Striped Newt	All	Sandhill & Scrubby Flatwoods

Rana capito aesopus/Florida Gopher Frog	All	Sandhill & Scrubby Flatwoods
Fishes - 2 Species		
Cyprinella leedsi/Bannerfin Shiner	Apalachicola, Wakulla	Aquatic
Micropterus notius/Suwannee Bass	Apalachicola, Osceola, Wakulla	Aquatic

Table E.2 (cont.)

Scientific Name/Common Name	Ranger District	Habitat Association
Mollusks - 2 Species		
Aphaostracon pyncus/Dense Hydrobe	Lake George	Aquatic
Alasmidonta wrightiana/Mussel	Apalachicola, Wakulla	Aquatic
Crustaceans - 3 Species		
Crangonyx hobbsi/Hobb's Cave Amphipod	Lake George, Seminole	Cave
Procambarus delicatus/Bigcheek Cave Crayfish	Lake George, Seminole	Cave
Procambarus orcinus/Woodville Cave Crayfish	Wakulla	Cave
Insects - 3 Species		
Cordulegaster sayi/Say's Dragonfly	Apalachicola	Forested Wetlands
Progomphus bellei/Belle's Sand Clubtail	Apalachicola, Wakulla	Forested Uplands
Somatochlora calverti/Calvert's Emerald	Apalachicola, Wakulla	Forested Wetlands
Plants - 85 Species		
Ageratina jucunda/Hammock Thorough-Wort	All	Sandhill & Scrubby Flatwoods
Agrimonia incisa/Incised Groovebur	Lake George, Seminole, Wakulla	Sandhill & Scrubby Flatwoods
Andropogon arctatus/Pine-Woods Bluestem	Apalachicola, Wakulla	Unforested Wetlands
Angelica dentata/Coastal-Plain Angelica	Apalachicola, Wakulla	Mesic Flatwoods & Wet Flatwoods
Arnoglossum floridanum/Florida Indian-Plantain	Lake George, Seminole	Sandhill & Scrubby Flatwoods
Asclepias curtissii/Curtis Milkweed	Seminole	Scrub
Asclepias pedicellata/Savannah Milkweed	All	Mesic Flatwoods & Wet Flatwoods
Asclepias viridula/Southern Milkweed	Apalachicola, Wakulla	Mesic Flatwoods & Wet Flatwoods
Asimina obovata/Flag Pawpaw	Lake George, Seminole	Forested Uplands
Aster chapmanii/Chapman's Aster	Apalachicola, Wakulla	Mesic Flatwoods & Wet Flatwoods
Aster eryngiifolius/Coyote Thistle Aster	Apalachicola, Wakulla	Mesic Flatwoods & Wet Flatwoods
Baptisia simplicifolia/Coastal Plain Wild Indigo	Apalachicola, Wakulla	Mesic Flatwoods & Wet Flatwoods
Berlandiera subacaulis/Florida Greeneyes	Lake George, Osceola, Seminole, Wakulla	Sandhill & Scrubby Flatwoods
Boltonia apalachicolensis/Apalachicola Doll's Daisy	Apalachicola	Forested Wetlands
Calamintha asheii/Ashe's Savory	Lake George	Scrub
Calamintha dentata/Toothed Savory	Apalachicola, Wakulla	Sandhill & Scrubby Flatwoods
Carex baltzellii/Baltzell's Sedge	Choctawhatchee	Sandhill & Scrubby Flatwoods
Carex chapmanii/Chapman's Sedge	Lake George	Xeric Hammock
Centrocema arenicola/Sand Butterfly Pea	Lake George, Seminole	Sandhill & Scrubby Flatwoods
Coelorachis tuberculosa/Piedmont Jointgrass	Lake George	Unforested Wetlands
Coreopsis nudata/Georgia Tickseed	Apalachicola, Choctawhatchee, Wakulla	Wetlands

Table E.2 (cont.)

Scientific Name/Common Name	Ranger District	Habitat Association
Ctenium floridanum/Florida Orange-Grass	Lake George	Mesic Flatwoods & Wet Flatwoods
Euphorbia discoidalis/No Common Name	Apalachicola, Choctawhatchee, Wakulla	Sandhill & Scrubby Flatwoods
Galactia floridana/Florida Milk-Pea	All	Sandhill & Scrubby Flatwoods
Galactia microphylla/No Common Name	Apalachicola, Choctawhatchee, Wakulla	Sandhills & Scrubby Flatwoods
Gentiana pennelliana/Wiregrass Gentian	Apalachicola, Wakulla	Unforested Wetlands
Hartwrightia floridana/Hartwrightia	Seminole	Mesic Flatwoods & Wet Flatwoods
Hedeoma graveolens/Mock Pennyroyal	Apalachicola, Wakulla	Mesic Flatwoods & Wet Flatwoods
Hymenocallis henryae/Panhandle Spiderlily	Apalachicola	Strand, Basin, & Dome Swamps
Hypericum chapmanii/A Saint John's-Wort	Apalachicola, Wakulla	Forested Wetlands
Hypericum exile/A Saint John's-Wort	Apalachicola	Mesic Flatwoods & Wet Flatwoods
Hypericum microsepalum/A Saint John's-Wort	Apalachicola, Osceola, Wakulla	Mesic Flatwoods & Wet Flatwoods
Illicium parviflorum/Star-Anise	Lake George, Seminole	Forested Wetlands
Justicia crassifolia/Thick-leaved Water Willow	Apalachicola	Forested Wetlands
Lachnoculon digynum/Bog Button	Apalachicola, Choctawhatchee	Unforested Wetlands
Leitneria floridana/Corkwood	Apalachicola, Wakulla	Forested Wetlands
Lindera subcoriacea/Bog Spicebush	Lake George, Seminole	Coastal
Linum westii/West's Flax	Apalachicola	Unforested Wetlands
Litsea aestivalis/Pondspice	Lake George, Osceola	Mesic Flatwoods & Wet Flatwoods
Lythrum curtissii/Curtiss' Loosestrife	Apalachicola	Forested Wetlands
Macranthera flammea/Hummingbird Flower	Apalachicola	Unforested Wetlands
Magnolia asheii/Ashe's Magnolia	Wakulla	Forested Wetlands
Monotropsis odorata/Sweet Pinesap	Lake George, Seminole	Forested Uplands
Myriophyllum laxum/Piedmont Water-Milfoil	Apalachicola, Wakulla	Aquatic
Nemastylis floridana/Fall-Flowering Ixia	Seminole	Mesic Flatwoods & Wet Flatwoods
Nolina atopocarpa/Florida Beargrass	Apalachicola, Lake George	Mesic Flatwoods & Wet Flatwoods
Nyssa ursina/Bog Tupelo	Apalachicola	Unforested Wetlands
Oxypolis ternata/No Common Name	Apalachicola	Mesic Flatwoods & Wet Flatwoods
Parnassia caroliniana/Carolina Grass of Parnassus	Apalachicola	Mesic Flatwoods & Wet Flatwoods
Persea humilis/Scrub Bay	Lake George, Seminole	Scrub
Phlox floridana/Florida Phlox	All	Forested Uplands
Phoebanthus tenuifolia/No Common Name	Apalachicola	Forested Uplands
Physostegia godfreyi/Apalachicola Dragonhead	Apalachicola	Mesic Flatwoods & Wet Flatwoods
Pieris phillyreifolia/Climbing Fetterbush	All	Strand, Basin, & Dome Swamps
Pinguicula planifolia/Chapman's Butterwort	Apalachicola, Wakulla	Forested Wetlands
Pityopsis flexuosa/Bent Golden Aster	Apalachicola, Wakulla	Sandhill & Scrubby Flatwoods
Pityopsis oligantha/Coastal-Plain Golden-Aster	Apalachicola, Wakulla	Forested Wetlands

Table E.2 (cont.)

Scientific Name/Common Name	Ranger District	Habitat Association
Polygala balduinii/White Milkwort	Osceola	Unforested Wetlands
Polygala leptostachys/Georgia Milkwort	Osceola	Sandhill & Scrubby Flatwoods
Pteroglossapsis ecristata/Wild Coco	Apalachicola, Lake Georgia, Seminole, Wakulla	Forested Uplands
Quercus arkansana/Arkansas Oak	Choctawhatchee	Sandhill & Scrubby Flatwoods
Rhexia parviflora/Small-Flowered Meadow Beauty	Apalachicola	Strand, Basin, & Dome Swamps
Rhexia salicifolia/Panhandle Meadow Beauty	Wakulla	Sandhill & Scrubby Flatwoods
Rhynchosia cinerea/Brown-Haired Snoutbean	Lake George, Seminole	Sandhill & Scrubby Flatwoods
Rhynchospora decurrens/Swamp Forest Beakrush	Apalachicola	Forested Wetlands
Rhynchospora pleiantha/Brown Beaked-Rush	All	Sandhill & Scrubby Flatwoods
Rudbeckia graminifolia/Grass-Leaf Coneflower	Apalachicola, Wakulla	Forested Wetlands
Ruellia noctifolia/White-Flowered Wild Petunia	Apalachicola	Forested Wetlands
Ruellia pedunculata var. *pinetorum*/Pinewoods Wild Petunia	Apalachicola	Mesic Flatwoods & Wet Flatwoods
Sabatia brevifolia/Short-Leaved Pink	All	Mesic Flatwoods & Wet Flatwoods
Salix floridana/Florida Willow	Lake George, Seminole	Forested Wetlands
Schoenocaulon dubium/Florida Feather-Shank	Lake George, Osceola, Seminole	Forested Uplands
Scutellaria glabriuscula/Georgia Skullcap	Choctawhatchee	Sandhill & Scrubby Flatwoods
Sideroxylon tenax/Tough Bumelia	Lake George, Seminole	Sandhill & Scrubby Flatwoods
Sorghastrum apalachicolense/Apalachicola Indiangrass	Apalachicola	Forested Uplands
Sporobolus floridanus/Florida Dropseed	All	Mesic Flatwoods & Wet Flatwoods
Tephrosia mohrii/Pineland Hoary-Pea	Choctawhatchee	Sandhill & Scrubby Flatwoods
Verbesina chapmanii/Chapman's Crownbeard	Apalachicola	Unforested Wetlands
Vicia ocalensis/Ocala Vetch	Lake George, Seminole	Forested Wetlands
Warea sessilifolia/Sessile-Leaved Warea	Apalachicola, Wakulla	Sandhill & Scrubby Flatwoods
Xyris drummondii/Drummond's Yellow-eyed Grass	Apalachicola	Unforested Wetlands
Xyris longisepala/Karst Pond Xyris	Wakulla	Sandhill & Scrubby Flatwoods
Xyris louisianica/Kral's Yellow-eyed Grass	Apalachicola	Unforested Wetlands
Xyris scabrifolia/Harper's Yellow-eyed Grass	Apalachicola	Unforested Wetlands

Species Viability Analysis

In compliance with planning regulations at 36 CFR 219.19 (viability) and 36 CFR 219.26 (diversity), a species viability analysis was conducted to evaluate the likelihood of persistence of selected species in the planning area. A team of wildlife biologists, botanists, and a fisheries biologist was convened and evaluated species viability in relation to the selected alternative (Alternative E) and the management direction in the *Revised Land and Resource Management Plan for National Forests in Florida* (Forest Plan). The species chosen to evaluate were selected from those that are threatened, endangered, proposed for listing, sensitive, locally rare, high-priority land birds, or species of special concern. The evaluation of each species considered habitat associations, population status, habitat status, relationship of population to habitat, risk factors, provisions in the Forest Plan, viability finding, and references. A form documenting the process was completed for each species. These forms are part of the process record.

Table E.3 gives a summary of the analysis and shows the likelihood of persistence on the national forests. One-hundred sixty-one species were evaluated: 79 were determined to have a high probability of persistence, 34 were determined to have a moderate probability of persistence, 34 were determined to have a low probability of persistence, and 14 were determined to have a unknown probability of persistence.

Table E.3

Summary of Species Viability Analysis

Finding	Animal Species	Common Name	Class	Community
H	*Acipenser oxyrinchus desotoi*	Gulf Sturgeon	T	Aquatic
H	*Alligator mississippiensis*	American Alligator	TSA	Aquatic
H	*Aphaostracon pyncus*	Dense Hydrobe	S	Aquatic
H	*Cyprinella leedsi*	Bannerfin Shiner	S	Aquatic
H	*Etheostoma okaloosae*	Okaloosa Darter	E	Aquatic
H	*Haliaeetus leucocephalus*	Bald Eagle	T	Aquatic
H	*Micropterus notius*	Suwannee Bass	S	Aquatic
H	*Rana virgatipes*	Carpenter Frog	LR	Aquatic
H	*Ambla neislerii*	Fat Three-Ridge Mussel	E	Aquatic
H	*Lampsilis subangulata*	Shiny-Rayed Pocketbook	E	Aquatic
H	*Medionidus penicillatus*	Gulf Moccasinshell	E	Aquatic
H	*Meleagris gallopavo*	Wild Turkey	HPLB	Forestwide
H	*Urus americanus floridanus*	Florida Black Bear	C	Forestwide
H	*Dryocopus pileatus*	Pileated Woodpecker	HPLB	Forestwide
H	*Myiarchus crinitus*	Great Crested Flycatcher	HPLB	Forestwide
H	*Colinus virginianus*	Northern Bobwhite	HPLB	Forested Uplands
H	*Dendroica discolor*	Prairie Warbler	HPLB	Forested Uplands
H	*Drymarchon corais couperi*	Eastern Indigo Snake	T	Forested Uplands
H	*Falco sparverius paulus*	Southeastern American Kestrel	HPLB	Forested Uplands
H	*Gopherus polyphemus*	Gopher Tortoise	S	Forested Uplands
H	*Lanius ludovicianus*	Loggerhead Shrike	HPLB	Forested Uplands
H	*Melanerpes erythrocephalus*	Red-headed Woodpecker	HPLB	Forested Uplands
H	*Picoides borealis*	Red-cockaded Woodpecker	E	Forested Uplands
H	*Sciurus niger shermani*	Sherman's Fox Squirrel	S	Forested Uplands
H	*Sitta pusilla*	Brown-headed Nuthatch	HPLB	Forested Uplands

Finding: H - High Probability of Persistence

Class: E - Endangered; C - Candidate Species; HPLB - High-Priority Land Bird; LR - Locally Rare; S - Sensitive; T - Threatened; TSA - Threatened/Similarity of Appearance

Table E.3 (cont.)

Finding	Animal Species	Common Name	Class	Community
H	*Dendroica dominica*	Yellow-throated Warbler	HPLB	Forested Wetlands
H	*Elanoides forficatus*	Swallow-tailed Kite	HPLB	Forested Wetlands
H	*Hylocichla mustelina*	Wood Thrush	HPLB	Forested Wetlands
H	*Lampropeltis getulus goini*	Apalachicola King Snake	S	Forested Wetlands
H	*Limnothlypis swainsonii*	Swainson Warbler	HPLB	Forested Wetlands
H	*Mycteria americana*	Woodstork	E	Forested Wetlands
H	*Protonotaria citrea*	Prothonotary Warbler	HPLB	Forested Wetlands
H	*Wilsonia citrina*	Hooded Warbler	HPLB	Forested Wetlands
H	*Apelococma coerulescens*	Florida Scrub-Jay	T	Scrub
H	*Neoseps reynoldsi*	Sand Skink	T	Scrub
H	*Podsomys floridanus*	Florida Mouse	S	Scrub
H	*Sceloporus woodi*	Florida Scrub Lizard	S	Scrub
H	*Stilosoma extenuatum*	Short-tailed Snake	S	Scrub
H	*Notopthalmus perstriatus*	Striped Newt	S	Sandhill & Scrubby Flatwoods
H	*Rana capito aesopus*	Florida Gopher Frog	S	Sandhill & Scrubby Flatwoods
H	*Pituophis melanoleucus mugitus*	Florida Pine Snake	S	Sandhill & Scrubby Flatwoods
H	*Ambystoma cingulatum*	Flatwoods Salamander	PT	Strand, Dome, & Basin Swamps
H	*Grus candensis pratensis*	Florida Sandhill Crane	S	Unforested Wetlands
H	*Aimophila aestivalis*	Bachman's Sparrow	S	Unforested Wetlands
M	*Neofiber alleni*	Round-tailed Muskrat	S	Aquatic
M	*Myotis grisescens*	Gray Bat	E	Cave
L	*Alasmidonta wrightiana*	No Common Name	S	Aquatic
L	*Trichechus manatus*	Florida Manatee	E	Aquatic
L	*Pleurobema pyriforme*	Oval Pigtoe	E	Aquatic
L	*Medionidus simpsonianus*	Ochlockonee Moccasinshell	E	Aquatic
L	*Elliptoideus sloatianus*	Purple Bankclimber Mussel	T	Aquatic
L	*Felis concolor coryi*	Florida Panther	E	Forestwide
U	*Cordulegaster sayi*	Say's Dragonfly	S	Aquatic
U	*Graptemys barbouri*	Barbour's Map Turtle	S	Aquatic
U	*Progomphus bellei*	Belle's Sand Clubtail	S	Aquatic
U	*Pseudemys concinna suwanniensis*	Suwannii Cooter Turtle	S	Aquatic
U	*Somatochlora calverti*	Calvert's Emerald	S	Aquatic
U	*Crangonyx hobbsi*	Hobb's Cave Amphipod	S	Cave
U	*Procambarus delicatus*	Bigcheek Cave Crawfish	S	Cave
U	*Procambarus orcinus*	Woodville Cave Crawfish	S	Cave
U	*Mustela frenata peninsulae*	Florida Long-tailed Weasel	S	Forested Uplands
U	*Ammodramus henslowii*	Henslow's Sparrow	HPLB	Mesic Flatwoods & Wet Flatwoods
Finding	**Plant Species**	**Common Name**	**Class**	**Community**
H	*Illicium parviflorum*	Star Anise	S	Bottomland Forest & Floodplain Swamp
H	*Asimina obovata*	Flag Pawpaw	S	Forested Uplands
H	*Phoebanthus tenuifolia*	No Common Name	S	Forested Uplands
H	*Sorghastrum apalachicolense*	Apalachicola Indiangrass	S	Forested Uplands
H	*Hypericum chapmanii*	A Saint John's-Wort	S	Forested Wetlands
H	*Justicia crassifolia*	Thick-leaved Water Willow	S	Forested Wetlands
H	*Pinguicula planifolia*	Chapman's Butterwort	S	Forested Wetlands
H	*Pityopsis oligantha*	Coastal-Plain Golden-Aster	S	Forested Wetlands
H	*Polygala hookeri*	Hooker Milkwort	S	Forested Wetlands
H	*Rudbeckia graminifolia*	Grass-Leaf Coneflower	S	Forested Wetlands

Finding: H - High Probability of Persistence; L - Low Probability of Persistence; U - Unknown; M - Moderate Probability of Persistence

Class: HPLB - High-Priority Land Bird; E - Endangered; PT - Proposed Threatened; S - Sensitive; T - Threatened

Table E.3 (cont.)

Finding	Plant Species	Common Name	Class	Community
H	*Asclepias pedicellata*	Savannah Milkweed	S	Mesic Flatwoods & Wet Flatwoods
H	*Baptisia simplicifolia*	Coastal Plain Wild Indigo	S	Mesic Flatwoods & Wet Flatwoods
H	*Aster chapmanii*	Chapman's Aster	S	Mesic Flatwoods & Wet Flatwoods
H	*Aster eryngiifolius*	Coyote Thistle Aster	S	Mesic Flatwoods & Wet Flatwoods
H	*Hedeoma graveolens*	Mock Pennyroyal	S	Mesic Flatwoods & Wet Flatwoods
H	*Hypericum microsepalum*	A Saint John's-Wort	S	Mesic Flatwoods & Wet Flatwoods
H	*Nolina atopocarpa*	Florida Beargrass	S	Mesic Flatwoods & Wet Flatwoods
H	*Oxypolis turnata*	No Common Name	S	Mesic Flatwoods & Wet Flatwoods
H	*Physostegia godfreyi*	Slender-leaved Dragonhead	S	Mesic Flatwoods & Wet Flatwoods
H	*Sabatia brevifolia*	Short-leaved Pink	S	Mesic Flatwoods & Wet Flatwoods
H	*Sporobolus floridanus*	Florida Dropseed	S	Mesic Flatwoods & Wet Flatwoods
H	*Bonamia grandiflora*	Florida Bonamia	T	Scrub
H	*Calamintha ashei*	Ashe's Savory	S	Scrub
H	*Persea humilis*	Scrub Bay	S	Scrub
H	*Ageratina jucunda*	Hammock Thorough-Wort	S	Sandhill & Scrubby Flatwoods
H	*Sideroxylon tenax*	Tough Bumelia	S	Sandhill & Scrubby Flatwoods
H	*Warea sessilifolia*	Sessile-leaved Warea	S	Sandhill & Scrubby Flatwoods
H	*Galactia floridana*	Florida Milk-Pea	S	Sandhill & Scrubby Flatwoods
H	*Galactia microphylla*	No Common Name	S	Sandhill & Scrubby Flatwoods
H	*Berl&iera subacaulis*	Florida Greeneyes	S	Sandhill & Scrubby Flatwoods
H	*Pieris phillyreifolia*	Climbing Fetterbush	S	Strand, Dome, & Basin Swamps
H	*Andropogon arctatus*	Pine Woods Bluestem	S	Unforested Wetlands
H	*Nyssa ursina*	Bog Tupelo	S	Unforested Wetlands
H	*Polygala balduinii*	White Milkwort	S	Unforested Wetlands
H	*Verbesina chapmanii*	Chapman's Crownbeard	S	Unforested Wetlands
H	*Coreopsis nudata*	Georgia Tickseed	S	Wetlands
M	*Boltonia apalachicolensis*	Apalachicola Doll's Daisy	S	Bottomland Forest & Floodplain Swamp
M	*Vicia ocalensis*	Ocala Vetch	S	Bottomland Forest & Floodplain Swamp
M	*Washington thorn*	Washington Thorn	LR	Bottomland Forest & Floodplain Swamp
M	*Schoenocaulon dubium*	Florida Feather-Shank	S	Forested Uplands
M	*Phlox floridana*	Florida Phlox	S	Forested Uplands
M	*Pteroglossapsis ecristata*	Wild Coco	S	Forested Uplands
M	*Ruellia noctifolia*	White-Flowered Wild Petunia	S	Forested Wetlands
M	*Hartwrightia floridana*	Hartwrightia	S	Mesic Flatwoods & Wet Flatwoods
M	*Scutellaria floridana*	Florida Skullcap	T	Mesic Flatwoods & Wet Flatwoods
M	*Angelica dentata*	Coastal-Plain Angelica	S	Mesic Flatwoods & Wet Flatwoods
M	*Asclepias viridula*	Southern Milkweed	S	Mesic Flatwoods & Wet Flatwoods
M	*Hypericum exile*	A Saint John's-Wort	S	Mesic Flatwoods & Wet Flatwoods
M	*Macbridea alba*	White Birds-in-a-Nest	T	Mesic Flatwoods & Wet Flatwoods
M	*Parnassia caroliniana*	Carolina Grass of Parnassus	S	Mesic Flatwoods & Wet Flatwoods
M	*Rhexia parviflora*	Small-Flowered Meadow Beauty	S	Multiple Types - Wet Margins
M	*Asclepias curtissii*	Curtis Milkweed	S	Scrub
M	*Eriogonum longifolium*	Scrub Buckwheat	T	Scrub
M	*Polygala lewtonii*	Small Lewton's Milkwort	E	Scrub
M	*Arnoglossum floridanum*	Florida Indian-Plantain	S	Sandhill & Scrubby Flatwoods
M	*Rhynchospora pleiantha*	Brown Beaked-Rush	S	Sandhill & Scrubby Flatwoods
M	*Euphorbia discoidalis*	No Common Name	S	Sandhill & Scrubby Flatwoods
M	*Agrimonia incisa*	Incised Groovebur	S	Sandhill & Scrubby Flatwoods
M	*Pityopsis flexuosa*	Bent Golden Aster	S	Sandhill & Scrubby Flatwoods

Finding: H - High Probability of Persistence M - Moderate Probability of Persistence

Class: E - Endangered LR - Locally Rare S - SensitiveT - Threatened

Table E.3 (cont.)

Finding	Plant Species	Common Name	Class	Community
M	*Rhynchosia cinerea*	Brown-Haired Snoutbean	S	Sandhill & Scrubby Flatwoods
M	*Xyris longisepala*	Karst Pond Xyris	S	Sandhill & Scrubby Flatwoods
M	*Parnassia grandifolia*	Large Flowered Grass of Parnassus	LR	Strand, Basin, & Dome Swamps
M	*Platanthera integra*	Yellow Fringeless Orchid	LR	Unforested Wetlands
M	*Gentiana pennelliana*	Wiregrass Gentian	S	Unforested Wetlands
M	*Harperocallis flava*	Harper's Beauty	E	Unforested Wetlands
M	*Pinguicula ionantha*	Godfrey's Butterwort	T	Unforested Wetlands
M	*Macranthera flammea*	Hummingbird Flower	S	Unforested Wetlands
L	*Myriophyllum laxum*	Piedmont Water-Milfoil	S	Aquatic
L	*Salix eriocephal*	Heart-Shaped Willow	LR	Bottomland Forest & Floodplain Swamp
L	*Salix floridana*	Florida Willow	S	Bottomland Forest & Floodplain Swamp
L	*Lindera subcoriacea*	Bog Spicebush	S	Coastal
L	*Leitneria floridana*	Corkwood	S	Forested Wetlands
L	*Lythrum curtissii*	Curtiss' Loosestrife	S	Forested Wetlands
L	*Magnolia ashei*	Ashe's Magnolia	S	Forested Wetlands
L	*Rhynchospora decurrens*	Swamp Forest Beakrush	S	Forested Wetlands
L	*Linum sulcatum* var. *harperi*	Harper's Grooved Yellow Flax	LR	Mesic Flatwoods & Wet Flatwoods
L	*Ctenium floridanum*	Florida Orange-Grass	S	Mesic Flatwoods & Wet Flatwoods
L	*Litsea aestivalis*	Pondspice	S	Mesic Flatwoods & Wet Flatwoods
L	*Nemastylis floridana*	Fall-Flowering Ixia	S	Mesic Flatwoods & Wet Flatwoods
L	*Ruellia pedunculata* var. *pinetorum*	Pinewoods Wild Petunia	S	Mesic Flatwoods & Wet Flatwoods
L	*Carex baltzellii*	Baltzell's Sedge	S	Sandhill & Scrubby Flatwoods
L	*Rhexia salicifolia*	Panhandle Meadow Beauty	S	Sandhill & Scrubby Flatwoods
L	*Scutellaria glabriuscula*	Georgia Skullcap	S	Sandhill & Scrubby Flatwoods
L	*Quercus arkansana*	Arkansas Oak	S	Sandhill & Scrubby Flatwoods
L	*Conradina glabra*	Apalachicola Rosemary	E	Sandhill & Scrubby Flatwoods
L	*Calamintha dentata*	Toothed Savory	S	Sandhill & Scrubby Flatwoods
L	*Polygala leptostachys*	Georgia Milkwort	S	Sandhill & Scrubby Flatwoods
L	*Hymenocallis henryae*	Panhandle Spiderlily	S	Strand, Basin, & Dome Swamps
L	*Coelorachis tuberculosa*	Piedmont Jointgrass	S	Unforested Wetlands
L	*Lachnoculon digynum*	Bog Button	S	Unforested Wetlands
L	*Linum westii*	West's Flax	S	Unforested Wetlands
L	*Xyris drummondii*	Drummond's Yellow-eyed Grass	S	Unforested Wetlands
L	*Xyris louisianica*	Kral's Yellow-eyed Grass	S	Unforested Wetlands
L	*Xyris scabrifolia*	Harper's Yellow-eyed Grass	S	Unforested Wetlands
L	*Carex chapmanii*	Chapman's Sedge	S	Xeric Hammock
U	*Monotropsis odorata*	Sweet Pinesap	S	Forested Uplands
U	*Tephrosia mohrii*	Pineland Hoary-Pea	S	Sandhill & Scrubby Flatwoods
U	*Centrocema arenicola*	Sand Butterfly Pea	S	Sandhill & Scrubby Flatwoods

Finding: L - Low Probability of Persistence M - Moderate Probability of Persistence U - Unknown

Class: E - Endangered LR - Locally Rare S - Sensitive T - Threatened

Summary of Species with Low Findings

Table E.4 show the findings of species with a low probability of persistence. These findings were due in a large part to the fact that either there are no known populations on the forests or the known populations are very small.

Table E.4

Species with Low Findings

Animal Species	Community	Provisions in Forest Plan	Findings
Alasmidonta wrightiana/ No Common Name	Aquatic	FW Goals: 7-9, 15 S&Gs: FI-7-8, -13; IN-1; WA-1-4; WL-21	Extremely low. This mussel requires riverine habitat and upstream movements of anadromous fish that are thought to serve as host of the glochidia. Impoundment of Lake Talquin eliminated the free-flow nature of the Ochlockonee River. Last known collections were taken in the 1930s.
Trichechus manatus/ Florida Manatee	Aquatic	S&Gs: WL-13-14	Population viability for this species is low but possibly improving. Statewide surveys continue to increase but mortality remains high. Forest Service management will make little difference to the species. Silver Glen will be managed to protect manatees in winter.
Elliptoideus sloatianus/ Purple Bankclimber Mussel	Aquatic	FW Goals: 7-9, 15 S&Gs: FI-7-8, -13; IN-1; WA-1-4; WL-21	Moderate off forest but low on forest due to limited habitat. Plan implementation ensures the protection of a healthy watershed that provides for continued species viability.
Medionidus simpsonianus/ Ochlockonee Moccasinshell	Aquatic	FW Goals: 7-9, 15 S&Gs: FI-7-8, -13; IN-1; WA-1-4; WL-21	Low both on and off forest. Only a single specimen has been collected since 1975. In 1990, a live *M. simpsonianus* was collected from the Ochlockonee River at a site near the U.S. Highway 27 crossing where it was once fairly common.
Pleurobema pyriforme/ Oval Plgtoe	Aquatic	FW Goals: 7-9, 15 S&Gs: FI-7-8, -13; IN-1; WA-1-4; WL-21	Low, both on and off forest. The historic range of this mussel was restricted to the Chipola tributary of the Apalachicola, Ochlockonee, and Suwannee Rivers. Recent collections are limited to the Chipola River drainage, the upper reaches of the Ochlockonee River above Talquin Reservoir, and the upper Santa Fe drainage, including New River.
Felis concolor coryi/ Florida Panther	Forestwide	S&Gs: VG-8; AC-2; IN-2-3; LA -2; MI-1 DFCs: 0.1, 0.2, 1.1, 5.1, 7.1, 7.2, 7.3	Plan implementation provides habitat for this species. There is a low probability of maintaining species viability due to the low number of individuals. All wild populations are located south of national forest lands. Specific reintroduction will be necessary for panthers to occur on the national forest. Texas cougar trials indicated that panthers could survive in north Florida. Public perceptions could limit aggressive reintroductions of the panther.

FW- Forestwide S&Gs - Standards & Goals DFCs - Desired Future Conditions

Table E.4 (cont.)

Plant Species	Community	Provisions in Forest Plan	Findings
Myriophyllum laxum/ Piedmont Water-Milfoil	Aquatic	S&Gs: VG-8, -19; WA-1-3	There is a low likelihood of maintaining species viability due to the few populations. Viability is low on private lands because of its rarity and the lack of habitat maintenance and/or protection.
Salix eriocephal/ Heart-Shaped Willow	Bottomland Forest & Floodplain Swamp	S&Gs: VG-4, -8, -19	There is a low likelihood of maintaining species viability due to the small number of occurrences. Moderate likelihood on private lands since the populations are larger, however this habitat is not maintained and/or protected.
Salix floridana/ Florida Willow	Bottomland Forest & Floodplain Swamp	FW Goals: 6-9 S&G: VG-4 DFCs: 0.2, 3.1	Due to rarity, specialized habitat, and inherent lack of species resilience, plan implementation has little effect on this species. Viability on or off the forest is considered low.
Lindera subcoriacea/ Bog Spicebush	Coastal	S&G: VG-8	Viability is considered low both on public and private lands because of rarity and lack of knowledge of the species.
Leitneria floridana/ Corkwood	Forested Wetlands	S&Gs: VG-10; WA-1-3	Viability potential is low on the national forest due to rarity on the forest, moderate off the forest.
Lythrum curtissii/ Curtiss' Loosestrife	Forested Wetlands	S&Gs: VG-10	Since it is not known to occur on the national forests, we can only speculate that our burning program and protection of wetlands from timber-related impacts will protect potential habitat or unknown populations. If future surveys discover unknown populations, some viability questions should be answered. Likelihood of persistence is considered low off the forest as well.
Magnolia ashei/ Ashe's Magnolia	Forested Wetlands	S&Gs: VG-4, -10	While plan implementation favors this species, there is a low likelihood of maintaining species viability due to the single occurrence. Viability is low on private lands since the populations are limited and this habitat is not protected from harvest or development.
Rhynchospora decurrens/ Swamp Forest Beakrush	Forested Wetlands	FW Objective: 4 S&Gs: VG-8, -16-19; WA-1-3	Low on the forest, mainly due to rarity. Moderate rangewide due to distribution.
Linum sulcatum var. *harperi* Harper's Grooved Yellow Flax	Mesic Flatwoods & Wet Flatwoods	S&Gs: FI-7-8, -13; VG-5, -18-19	Viability is low for this species regardless of the protective measures since it has not be documented on the forest. Viability is also low on private lands because if its rarity and the lack of habitat maintenance and/or protection.
Ctenium floridanum/ Florida Orange-Grass	Mesic Flatwoods & Wet Flatwoods	FW Goals: 6, 8-10 FW Objective: 4 S&Gs: AC-1-2; FI-6-8, -12-13; VG-4, -8, -17, -37-39; WA-1-5	Species not confirmed to occur on the national forests in Florida. Likelihood of species persistence if it occurs is unknown but plan implementation provides suitable habitat.
Litsea aestivalis/ Pondspice	Mesic Flatwoods & Wet Flatwoods	S&G: VG-8	Due to the rarity of the species, viability is considered low both on and off the national forest.

FW- Forestwide S&Gs - Standards & Goals DFCs - Desired Future Conditions

Table E.4 (cont.)

Plant Species	Community	Provisions in Forest Plan	Findings
Nemastylis floridana/ Fall-Flowering Ixia	Mesic Flatwoods & Wet Flatwoods	FW Goals: 6, 8-10 FW Objectives: 4-5 MA & DFC: 7 S&Gs: AC-1-2; FI-6-8, -12-13; VG-4, -8, -11, -13-14, -16-19, -22-23, -37-39; WA-1-5	Low likelihood of species persistence due to sensitivity and limited sites.
Ruellia pedunculata var. *pinetorum*/Pinewoods Wild Petunia	Mesic Flatwoods & Wet Flatwoods	FW Objective: 4 S&Gs: VG-4, -16-19	Low on the national forests due to rarity and off the national forest due to a combination of rarity and habitat destruction.
Calamintha dentata/ Toothed Savory	Sandhill & Scrubby Flatwoods	S&Gs: FI-7-8; VG-2, -17-19	There is a low likelihood of maintaining species viability due to the small number of populations/individuals. However, due to protected populations on lands managed by The Nature Conservancy (Apalachicola Bluffs and Ravines) and some potential for protection on lands purchased under P2000, a Florida State land acquisition program, likelihood of persistence off the national forest is considered moderate.
Carex baltzellii/ Baltzell's Sedge	Sandhill & Scrubby Flatwoods	S&G: VG-8	Low on the forest since we manage so little potential habitat. Low rangewide due to specialized habitat and most habitat being under private ownership with little protection being offered.
Polygala leptostachys/ Georgia Milkwort	Sandhill & Scrubby Flatwoods	FW Objective: 4 S&Gs: VG-16-19	Low, because of the rarity of this species on and off the forest and because there is little good habitat on private lands.
Quercus arkansana/ Arkansas Oak	Sandhill & Scrubby Flatwoods	S&Gs: VG-17-18	Chances of maintaining viable populations of this species on the national forest are low due to the its rarity on the forest and because most of the habitat on the forest is likely to be exchanged. Rangewide viability is probably low as well unless significant populations are on properly managed public lands.
Rhexia salicifolia/ Panhandle Meadow Beauty	Sandhill & Scrubby Flatwoods	S&Gs: VG-4, -8, -19; WA-1-3	There is a low likelihood of maintaining species viability due to the fact that there is only one known population.
Scutellaria glabriuscula/ Georgia Skullcap	Sandhill & Scrubby Flatwoods	FW Objective: 4 S&Gs: VG-16-19	Low on the forest due to little habitat on national forest lands. Moderate due to loss of habitat on private lands.
Conradina glabra/ Apalachicola Rosemary	Sandhill & Scrubby Flatwoods	S&Gs: FI-7-8; VG-2, -17, -19	Low both on and off the forest. Species viability on the forest is somewhat irrelevant since there are no known populations. Viability is low on private lands because much of this habitat has been degraded by a combination of fire suppression and conversion to sand pine plantations.

FW- Forestwide S&Gs - Standards & Goals DFCs - Desired Future Conditions

Table E.4 (cont.)

Plant Species	Community	Provisions in Forest Plan	Findings
Hymenocallis henryae/ Panhandle Spiderlily	Strand, Basin, & Dome Swamps	S&Gs: VG-8, -19; WA-1-3	There is a low likelihood of maintaining species viability due to the few populations. Viability is low on private lands because of its rarity and the lack of habitat maintenance and/or protection.
Coelorachis tuberculosa/ Piedmont Jointgrass	Unforested Wetlands	FW Goals: 6-10 FW Objective: 4 S&Gs: AC-1-2; FI-6-8, -12-13; VG-4, -37-39; WA-1-5 DFCs: 3.1, 7	Low, due to the few known populations on the forest and to the likelihood of these being impacted by such unauthorized disturbances as off-highway vehicles. Viability off the forest is unknown.
Coelorachis tuberculosa/ Piedmont Jointgrass	Unforested Wetlands	FW Goals: 6-10 FW Objective: 4 S&Gs: AC-1-2; FI-6-8, -12-13; VG-4, -37-39; WA-1-5 DFCs: 3.1, 7	Low, due to the few known populations on the forest and to the likelihood of these being impacted by such unauthorized disturbances as off-highway vehicles. Viability off the forest is unknown.
Lachnoculon digynum/ Bog Button	Unforested Wetlands	S&Gs: FI-7-8, -13; VG-4-5, -19	While Forest Plan implementation should favor this species, viability on the forest is considered low due to lack of documented populations. Some protection may be provided to populations on Blackwater State Forest and Eglin Air Force Base in west Florida panhandle, however viability is considered low off the forest due to loss of habitat and few protected populations.
Linum westii/ West's Flax	Unforested Wetlands	S&Gs: FI-7-8, -13; VG-4-5, -19	There is a low likelihood of maintaining species viability due to the small number of occurrences. Viability is also low on private lands because of its rarity and the lack of habitat maintenance and/or protection.
Xyris drummondii/ Drummond's Yellow-eyed Grass	Unforested Wetlands	S&Gs: FI-7-8, -13; VG-4-5, -19	There is a low likelihood of maintaining species viability due to the small number of occurrences. Viability is also low on private lands because if its rarity and the lack of habitat maintenance and/or protection.
Xyris louisianica/ Kral's Yellow-eyed Grass	Unforested Wetlands	S&Gs: FI-7-8, -13; VG-4-5, -19	There is a low likelihood of maintaining species viability due to the small number of occurrences. Viability is also low on private lands because if its rarity and the lack of habitat maintenance and/or protection.
Xyris scabrifolia/ Harper's Yellow-eyed Grass	Unforested Wetlands	S&Gs: FI-7-8, -13; VG-4-5, -19	There is a low likelihood of maintaining species viability due to the small number of occurrences. Viability is also low on private lands because the habitat is not maintained and/or protected.
Carex chapmanii/ Chapman's Sedge	Xeric Hammock	FW Goals: 6, 8, 9 S&Gs: AC-1-2; FI-6-8; VG-4, -18, -24 , -27, -37, -39 DFC: 8	While the Forest Plan should provide for sufficient habitat, scarcity of documented occurrences on the forest indicates that viability on the national forest is low. Viability off the forest appears to be low as well due to lack of protected habitat.

FW- Forestwide S&Gs - Standards & Goals DFCs - Desired Future Conditions

APPENDIX F

Biological Assessment for the Revised Land and Resource Management Plan for *National Forests in Florida*

The purpose of this Biological Assessment is to determine the effects of implementation of the The *Land and Resource Management Plan for the National Forests in Florida* (Forest Plan) on all federally listed species that occur or have potential habitat on *National Forests in Florida*. The objectives of this Biological Assessment are to:

1. Document the occurrence or possibility of occurrence of federally listed species within the planning area of *National Forests in Florida*.

2. Determine what effects implementing the Forest Plan direction will have on federally listed species at the programmatic level.

Proposed Action

The proposed action is the implementation of the *Revised Land and Resource Management Plan for the National Forests in Florida*. The revised Forest Plan sets management direction for the national forests (NFs) in Florida for the next 10 to 15 years. The forestwide desired future conditions (DFCs), goals, and objectives are found in Chapter 2; forestwide standards and guidelines are found in Chapter 3; management area goals, desired future conditions, standards, and guidelines are found in Chapter 4; and monitoring, evaluation, research, and implementation are found in Chapter 5 of the Forest Plan. The Forest Plan is a programmatic document and does not make site-specific management decisions.

Location

National Forests in Florida extends from central Florida to the panhandle and includes the Apalachicola, Choctawhatchee, Ocala, and Osceola National Forests.

Apalachicola NF (575,489 acres) is located in Franklin, Leon, Liberty, and Wakulla Counties. Its terrain is flat to gently rolling and pocked by many bays, sinkholes, and swamps. Soils range from excessively drained to very poorly drained. Natural fertility is low, but in specific locations it may run high. The primary vegetation is longleaf pine and slash pine with an understory of wiregrass, palmetto, and gallberry. The forest has two ranger districts (RDs): Apalachicola RD (based in Bristol) covers

land west of the Ochlockonee River and the Wakulla RD (based near Crawfordville) covers land east of the river.

Choctawhatchee NF is located in Okaloosa, Santa Rosa, and Walton Counties. This land was managed by the Forest Service until 1940, when all lands were transferred to the War Department. Most of this land is now Eglin Air Force Base. In June 1980, 1,153 acres were restored to national forest status when these acres were declared excess and transferred to the Forest Service. The majority of this land is under special-use permit to State and county governments. This forest is administered by the Apalachicola District Ranger.

Ocala NF (383,362 acres) is located in Lake, Marion, and Putnam Counties. Its terrain is gently rolling. Soils range from poorly drained to excessively drained with low natural fertility. This forest has 30,857 acres of lakes and ponds scattered throughout it. There are many popular recreation areas. A wide variety of vegetation thrives here—including cypress, hardwood, longleaf pine, and sand pine scrub. This forest has two ranger districts: Lake George RD (based near Silver Springs) covers land north of State Highway 40 and Seminole RD (based in Umatilla) covers land south of State Highway 40.

Osceola NF (194,732 acres) is located in Baker and Columbia Counties. Its terrain is flat. Soils are poorly drained and low in natural fertility. Longleaf pine predominates on the higher, drier ground, and the poorly drained swamplands feature slash pine, cypress, and a variety of southern hardwood. This forest is based in Olustee.

Species Descriptions

Species descriptions are adapted from the U.S. Fish and Wildlife Service endangered species home page species accounts, Florida Game and Fresh Water Fish Commission web page, and from species accounts in the Rare and Endangered Biota of Florida series, University Press of Florida.

Table F.1 presents the federally listed species that occur or have potential habitat on national forests in Florida and that will be covered in this Biological Assessment. No critical habitat has been designated on the forests for any of the reviewed species. Red-cockaded woodpecker (RCW) populations on the Apalachicola RD and Osceola NF have been identified as recovery populations.

Table F.1

Potential Species and Habitat Status on National Forests in Florida

Species	Status	Ranger District
Animals		
Mammals		
Felis concolor coryi/Florida Panther	E	Lake George, Seminole
Myotis grisescens/Gray Bat	E	Osceola, Wakulla
Trichechus manatus latirostris/Florida Manatee aka West Indian Manatee	E	Lake George
Ursus americanus floridanus/Florida Black Bear	C	All
Birds		
Aphelocoma coerulescens/Florida Scrub-Jay	T	Lake George, Seminole
Haliaeetus leucocephalus/Bald Eagle	T	All
Mycteria americana/Wood Stork	E	All
Picoides borealis/Red-cockaded Woodpecker	E	All
Reptiles		
Alligator mississippiensis/American Alligator	TSA	All
Drymarchon corais couperi/Eastern Indigo Snake	T	All
Neoseps reynoldsi/Sand Skink	T	Lake George, Seminole
Amphibians		
Ambystoma cingulatum/Flatwoods Salamander	PT	Apalachicola, Osceola, Wakulla

Species	Status	Ranger District
Fishes		
Acipenser oxyrinchus desotoi/Gulf Sturgeon	T	Apalachicola, Wakulla

E - endangered C - candidate T - threatened TSA - threatened/similarity of appearance
PT - proposed threatened

Table F.1 (cont.)

Species	Status	Ranger District
Mollusks		
Amblema neislerii/Fat Three-Ridge Mussel	E	Apalachicola
Elliptoideus sloatianus/Purple Bankclimber Mussel	T	Apalachicola, Wakulla
*Lampsilis subangulatal*Shiny-Rayed Pocketbook	E	Apalachicola, Wakulla
Medionidus penicillatus/Gulf Moccasinshell	E	Apalachicola
*Medionidus simpsonianus/*Ochlockonee Moccasinshell	E	Wakulla
*Pleurobema pyriforme/*Oval Pigtoe	E	Apalachicola, Wakulla
Plants		
Bonamia grandiflora/Florida Bonamia	T	Lake George, Seminole
Conradina glabra/Apalachicola Rosemary	E	Apalachicola*
Eriogonum longifolium var. *gnaphalifolium*/Scrub Buckwheat	T	Seminole
Harperocallis flava/Harper's Beauty	E	Apalachicola
Macbridea alba/White Birds-in-a-Nest	T	Apalachicola
Pinguicula ionantha/Godfrey's Butterwort	T	Apalachicola
Polygala lewtonii/Small Lewton's Milkwort	E	Lake George
Scutellaria floridana/Florida Skullcap	T	Apalachicola

E - endangered C - candidate T - threatened TSA - threatened/similarity of appearance
*Not actually found on the Apalachicola NF, but its Recovery Plan directs us to look for it there.

Florida Panther (*Felis concolor coryi*)

Family: Felidae

Status: Endangered throughout its range (*Federal Register*, March 11, 1967)

Description: The Florida panther is a large, long-tailed cat with a great deal of color variation: pale brown or rusty upper parts; dull white or buffy under parts; and tail tip, back of ears, and sides of nose are dark brown or blackish. Mature male panthers examined in the wild in Florida since 1978 have weighed from 102 to 154 pounds and measured nearly 7 feet from nose to tip of tail. Females were considerably smaller, with a weight range of 50 to 108 pounds and measuring about 6 feet.

Feeding Habits: Preliminary analyses of panther diets in the southwest Florida study area indicate that panthers subsist on a variety of mammalian prey dominated by white-tailed deer, wild hog, and in some areas raccoon.

Reproduction and Development: Only preliminary data are available on Florida panther reproduction. Existing data indicate that breeding may occur throughout the year with a peak in the winter/spring period, a gestation period of around 90 to 95 days, litter sizes of 1 to 4 kittens, and a breeding cycle of 2 years for females successfully raising young to dispersal, which occurs around 18 to 24 months. Male panthers examined to date exhibit an exceedingly high proportion of abnormal sperm forms (more than 90 percent), with the major defect involving the acrosome or head of the spermatozoa.

Range and Population Level: The historic range included eastern Texas or western Louisiana and the lower Mississippi River valley east through the

Southeastern states (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, and parts of Tennessee and South Carolina). The only known self-sustaining population occurs in south Florida, generally within the Big Cypress Swamp physiographic region and centered in Collier and Hendry Counties. Within the last decade, radio-instrumented panthers also have utilized habitats in Broward, Dade, Glades, Highlands, Lee, and Monroe Counties. Currently, the wild population is estimated to be comprised of 30 to 50 adult animals.

Habitat: In general, panther population centers appear to indicate a preference toward large remote tracts with adequate prey, cover, and reduced levels of disturbance. Appropriate cover is an important component of habitats used, especially during hunting, denning, and day-bedding. Saw palmetto was the dominant cover in 72 percent of observed day-bedding sites. Annual home-range sizes of 26 instrumented panthers monitored in southwest Florida varied from 20 to 457 sq. mi. Home ranges averaged 200 sq. mi. for resident adult males, 75 sq. mi. for adult females, 241 sq. mi. for transient males, and 69 sq. mi. for subadult females (Maehr et al., 1991).

Habitat on National Forests in Florida: There are no known Florida panthers using national forest lands. The Osceola NF is a possible reintroduction site. It was used as a test site for the reintroduction of Florida panthers. Sterile western cougars were released to test the possibility of future releases of Florida panthers.

Management and Protection: The initial recovery plan was prepared by the Florida Panther Recovery Team and was approved by the U.S. Fish and Wildlife Service on December 17, 1981. This plan was revised by the Florida Panther Interagency Committee's Technical Subcommittee and approved by the U.S. Fish and Wildlife Service on June 22, 1987. The recovery objective, as presented in the revised recovery plan, is to achieve three viable, self-sustaining populations within the historic range of the panther. This is to be accomplished through three principal subobjectives:

1. Identify, protect, and enhance existing panthers rangewide and protect and manage habitats.

2. Establish positive public opinion support for the management of the panther.

3. Reintroduce panthers into areas of suitable habitat.

Gray Bat (*Myotis grisescens*)

Family: Vespertilionidae

Status: Endangered throughout its range (*Federal Register*, April 28, 1976)

Description: The largest member of its genus in the eastern United States, the gray bat weighs from 7 to 16 grams. Its forearm ranges from 40 to 46 millimeters (mm) in length. One feature that distinguishes this species from all other eastern bats is its uni-colored dorsal fur. The other bats have bi- or tri-colored fur on their backs. Also, the gray bat's wing membrane connects to the foot at the ankle instead of at the base of the first toe, as in other species of Myotis. For a short period after molt in July or August, gray bats are dark gray; but their fur usually bleaches to russet between molts. This difference in

fur color is especially apparent in females during their reproductive season in May or June. Little is known about the actual feeding habits of gray bats. However, limited observations indicate that the majority of insects eaten are aquatic species, particularly mayflies.

Reproduction and Development: Upon arrival at their wintering caves in early fall, the mature females enter estrus and are inseminated by sexually active males. The offspring, one per female, are born the following June when the colonies have migrated to their summer range. The period from birth to weaning covers about 2 months. During this time the colonies are usually segregated into maternity caves, where the young are reared, and into bachelor caves which house the adult males and yearlings of both sexes. By August, all of the juveniles are flying and there is a general mixing and dispersal of the colony over the summer range. Fall migration begins around the first of September and is usually completed by early November.

Range and Population Level: Populations are found mainly in Alabama, northern Arkansas, Kentucky, Missouri, and Tennessee, but a few occur in northwestern Florida, western Georgia, southwestern Kansas, southern Indiana, southern and southwestern Illinois, northeastern Mississippi, northeastern Oklahoma, western Virginia, and possibly western North Carolina. Distribution within range is always patchy, but fragmentation and isolation of populations have been a problem during the past three decades. The gray bat population was estimated to be about 2.25 million in 1970; however, in 1976 a census of 22 important colonies in Alabama and Tennessee revealed an average decline of more than 50 percent. Due to protective increases taken at high-priority colony sites in the late 1970s and throughout the 1980s, the declines have been arrested at some major sites, and those populations are now stable or in some cases increasing.

Habitat: Gray bat colonies are restricted entirely to caves or cavelike habitats. During summer the bats are highly selective for caves providing specific temperature and roost conditions. Usually these caves are all located within a kilometer of a river or reservoir. In winter they utilize only deep, vertical caves having a temperature of 6-11 degrees centigrade. Consequently, only a small proportion of the caves in any area are or can be used regularly. There are nine known caves that are believed to house about 95 percent of the hibernating population. One-way migrating distance between winter and summer caves may vary from as little as 10 miles to more than 200 miles. Banding studies indicate the bats occupy a rather definite summer range with relation to the roosting site and nearby foraging areas over large streams and reservoirs. Summer colonies show a preference for caves not more than 1.2 miles from the feeding area.

Habitat on National Forests in Florida: There are no caves on the forests that could provide the conditions required by gray bats for roosting and breeding habitat. Gray bats occasionally may occur over the forests during migration or foraging.

Reasons for Current Status: Gray bat colonies roost only in caves and cavelike habitats. Human disturbance and vandalism may have been primarily responsible for the decline. Disturbance of a maternity colony may cause thousands of young to be dropped to the cave floor where they perish; excessive disturbance may cause a colony to completely abandon

a cave. Other factors that contributed to the decline include pesticide poisoning, natural calamities such as flooding and cave-ins, loss of caves due to inundation by human-made impoundments, and possibly a reduction in insect prey over streams that have been degraded through excessive pollution and siltation. Improper cave gating or cave commercialization also have contributed to some population declines.

Florida Manatee (*Trichechus manatus latirostris*)

Family: Trichechidae

Status: Endangered (*Federal Register*, March 11, 1967 and June 2, 1970)

Description: The Florida manatee, aka West Indian manatee, is a large gray or brown aquatic mammal. Adults average about 10 feet long and weigh 1,000 pounds. They have no hind limbs, and their forelimbs are modified as flippers. Manatee tails are flattened horizontally and rounded. Their body is covered with sparse hairs and their muzzles with stiff whiskers. Sexes are distinguished by the position of the genital openings and presence or absence of mammary glands. Manatees will consume any aquatic vegetation available to them and sometimes even shoreline vegetation. Although primarily herbivorous, they will occasionally feed on fish. Manatees may spend about 5 hours a day feeding and may consume 4 to 9 percent of their body weight a day.

Reproduction and Development: Observations of mating herds indicate that females mate with a number of males during their 2-to-4 week estrus period, and then they go through a pregnancy estimated to last 12 to 14 months. Births occur during all months of the year with a slight drop during winter months. Manatee cows usually bear a single calf, but 1.5 percent of births are twins. Calves reach sexual maturity at 3 to 6 years of age. Mature females may give birth every 2 to 5 years. The only long-term, stable bond between manatees is that between a cow and her calf. Weaning usually occurs between 9 and 24 months of age, although a cow and calf may continue to associate with each other for several more years. There is little information on the life-time reproductive output of females, although they may live more than 50 years.

Range and Population Level: During the winter months, the manatee population in the United States confines itself to the coastal waters of the southern half of peninsular Florida and to springs and warm-water outfalls as far north as southeast Georgia. Manatees also winter in the St. Johns River near Blue Spring State Park. During summer months, they may migrate as far north as coastal Virginia on the east coast and the Louisiana coast on the Gulf of Mexico. Manatee populations also exist outside the continental United States in coastal areas of the Caribbean and Central and South America. In Puerto Rico, manatees apparently occur around the southern and eastern end of the island and around nearby Vieques Island. Except for rare sightings, manatees seem to be absent from the Virgin Islands at present, but fossils have been found in middens on St. Croix. The population of manatees in Florida has been estimated to be at least 1,865 individuals. There are an estimated 60 to 100 manatees in Puerto Rico. In the last decade, yearly mortality in Florida has averaged nearly 150 animals a year, double that of the preceding decade. The average proportion of first-year calves in the population is 10 percent with a range of 5 to 15 percent.

Habitat: Manatees inhabit both saltwater and freshwater of sufficient depth (1.5 meters to usually less than 6 meters) throughout their range. They may be encountered in canals, rivers, estuarine habitats, saltwater bays, and on occasion have been observed as far as 3.7 miles off the Florida gulf coast. Between October and April, Florida manatees concentrate in areas of warmer water. When water

temperatures drop below about 21 to 22 degrees centigrade, they migrate to south Florida or form large aggregations in natural springs and industrial outfalls. Severe cold fronts have been known to kill manatees when the animals did not have access to warm-water refuges. During warmer months they appear to choose areas based on an adequate food supply, water depth, and proximity to freshwater. Manatees may not need freshwater but they are frequently observed drinking freshwater from hoses, sewage outfalls, and culverts. There is no evidence of any periodicity in manatee habitat use in Puerto Rico.

Habitat on National Forests in Florida: Silver Glen Springs from its point of origin to its confluence with Lake George and Lake George are the only areas of habitat with known use in the forests.

Reasons for Current Status: The manatee population was probably more abundant in the 18th or 19th century than today. Initial population decreases probably resulted from overharvesting for meat, oil, and leather. Today, hunting is prohibited and is not considered a problem; although there is an occasional poaching incidence. However, heavy mortality does occur from accidental collisions with boats and barges and from canal lock operations. Manatee population trends are poorly known, but deaths have increased steadily. Mortalities from collisions with watercraft are up 10.3 percent a year from 21 percent of all deaths in 1976 to 1980 to 29 percent in 1986 to 1991. Deaths of dependent calves are up 12 percent a year from 14 to 24 percent of all deaths. The combination of high mortality rates and low reproductive rates has led to serious doubts about the species' ability to survive in the United States. Another closely related factor in the decline has been the loss of suitable habitat through incompatible coastal development, particularly destruction of sea grass beds by boating facilities. In Puerto Rico, the primary cause of manatee mortality seems to be from entanglement in gill nets. Collisions with boats and illegal killing of manatees for food also may be affecting the Puerto Rican population to some extent, but supporting data are limited.

Florida Black Bear (*Ursus americanus floridanus*)

Family: Ursidae

Status: Candidate

Description: The Florida black bear is one of 16 recognized subspecies of the American black bear. This species was formerly widespread in North America, from northern Alaska to Newfoundland to northern Mexico. Black bears are huge, bulky mammals with long black hair. Although weight varies considerably, large males may weigh more than 600 pounds.

Biological Information: The black bear is a habitat generalist. Bears are mobile, opportunistic, largely herbivorous omnivores that exploit a variety of foods. The distribution and abundance of foods, particularly mast, largely affects their movements. The size of a bear's range, or area it traverses annually to secure food and mates and to care for young, is probably directly related to the diversity of vegetative cover or habitats. Constituent elements of black bear habitat include hard and soft mast, escape cover, denning sites,

corridor habitats, and some freedom from disturbance by humans.

Reproduction and Development: While some females may breed at 3 years of age, it is likely that most don't breed until 4 years of age. Parturition in black bears generally has been assumed to occur in late January or early February with the actual birthing often occurring while the female is in hibernation. Litter sizes range from one to three cubs.

Habitat: The Florida black bear was considered numerous at the time of early colonization, serving as food both for Native Americans and white settlers. Occupation of habitat, hunting, and ultimately habitat destruction through conversion of the virgin forests for farming combined to bring about the decline of the black bear. The black bear remains widespread in Florida, but its distribution is reduced and has become fragmented. Large, undeveloped woodland tracts are the preferred habitat.

Habitat on National Forests in Florida: All the forests provide black bear habitat.

Florida Scrub-Jay (*Aphelocoma coerulescens*)

Family: Corvidae

Status: Threatened

Description: The Florida scrub-jay is a 12-inch-long, blue and gray crestless jay that lacks the white wing spots and tail feather tips of the more common and widespread blue jay. A necklace of blue feathers separates the whiter throat from the gray whitish forehead. The tail is long and loose in appearance, and the back is gray. Scrub-jays less than about 5 months old can be identified by their dusky brown head and neck, but there are no such physical traits that distinguish males from females.

Range and Habitat: The Florida scrub-jay is restricted to scattered, often small and isolated, patches of sand pine scrub, xeric oak scrub, scrubby flatwoods, and scrub by coastal strand in peninsular Florida. They have very specific habitat requirements and avoid wetlands and forests, including canopied sand pine stands. Optimal scrub-jay habitat is dominated by shrubby scrub live oaks, myrtle oaks, or scrub oaks from 3 to 10 feet tall covering 50-90 percent of the area; bare ground or sparse vegetation less than 6 inches tall covering 10-50 percent of the area; and scattered trees, with no more than about 20 percent canopy cover.

Habitat on National Forests in Florida: The Ocala NF provides the only suitable habitat for Florida scrub-jays.

Food: Florida scrub-jays eat a variety of animals and plants. Insects comprise a major food source during spring and summer. These birds also prey on other terrestrial invertebrates and on small vertebrates— including bird eggs, frogs, lizards, snakes, toads, and even mice. Acorns are consumed year-round and are the birds' staple diet. Other plant material

consumed includes drupes, greenbrier berries, and tread-softly fruits. Corn, peanuts, and sunflower seeds are readily accepted.

Nesting: Florida scrub-jays mate for life. Breeding rarely occurs before 2 years of age, and often not until the birds are 3 or 4 years old. Their breeding season is short compared with other Florida perching birds; nests with eggs or young occur from early March through June. Scrub-jays build a new nest each year. The nest, a shallow basket of twigs lined with palmetto fibers, is typically built about 3-10 feet above ground in one of the shrubby oaks. Scrub-jays usually raise only one brood per year, but in the case of nest failures, they may lay two, three, or even four clutches a season, each in a new nest. Clutch size is usually three or four eggs but may vary from two to five eggs. Incubation requires 17 days, and the nestlings fledge about 17 days after hatching.

Behavior: Florida scrub-jays live in family groups composed of a breeding pair, their offspring from years past and present, and sometimes even birds ``adopted'' from other families. In contrast to all other Florida songbirds, scrub-jays (especially males) may remain in their parents' territory as helpers for several years before dispersing to establish their own territory or join another family. A well-defined hierarchy exists within these extended family groups: the male breeder dominates all other family members, and male helpers dominate all females. Among helpers of the same sex, older birds dominate younger ones. Cooperation among family members is a complex and fascinating aspect of scrub-jay family life. Each family maintains a permanent territory ranging from 5 to 50 acres (averaging about 25 acres), which it defends from adjacent families. Scrub-jays exhibit a well-established sentinel system in which each bird, in turn, will watch for predators while other family members go about their daily activities. The helpers assist in defending the breeding territory, nest, and young from neighboring scrub-jays and predators. They also help feed the nestlings and fledglings. They do not, however, assist in nest-building, incubating, or brooding activities. Long-term studies have established that helpers contribute to the reproductive effort; breeding pairs with helpers successfully raise more young than do lone pairs.

Management: Habitat management for scrub-jays essentially consists of periodically cutting or burning scrub tracts to maintain the desired shrub height, canopy closure, and percentage of bare ground. Optimal fire frequency for scrub-jay management is about once every 5 to 20 years. Mechanical site renovation also may prove satisfactory for scrub-jay habitat management where prescribed burning is inadvisable. Some evidence suggests that scrub-jays may persist indefinitely in residential or recreational developments, provided adequate patches of scrubby habitat remain as preserves, vacant lots, hedgerows, or ``green spaces.''

Scrub-Jay Preserves: Because of the territoriality of this species and the requirement for maintaining specific habitat conditions, it is likely that a ``viable'' population can be only supported on the very largest scrub preserves. It is likely, however, that small populations scattered throughout a region actually function as a metapopulation, or ``population of populations.'' It is important, therefore, that scrub-jays be preserved wherever they occur, with each isolated population being recognized as an integral part of a larger, regional scrub-jay

population. As little as 5-10 acres of suitable habitat may support a mated pair, but 25 acres per family is recommended as a general guideline for establishing scrub-jay preserves.

Bald Eagle (*Haliaeetus leucocephalus*)

Family: Accipitridae

Status: On July 12, 1995, the U.S. Fish and Wildlife Service reclassified the bald eagle from endangered to threatened throughout the lower 48 states (*Federal Register*, July 12, 1995). Previously, the eagle had been listed as endangered in all states except Michigan, Minnesota, Oregon, Washington, and Wisconsin, where it continues to be classified as threatened (*Federal Register,* March 11, 1967 and February 14, 1978).

Description: A large raptor, the bald eagle has a wingspread of about 7 feet. Its plumage is mainly dark brown to black, and adults have a pure white head and tail. First-year juveniles are often chocolate brown to blackish, sometimes with white mottling on the tail, belly, and underwings. The head and tail become increasingly white with age until full adult plumage is reached in the fifth or sixth year. An opportunistic predator, the bald eagle feeds primarily on fish but also takes a variety of birds, mammals, and turtles (both live and as carrion) when fish are not readily available.

Reproduction and Development: The breeding season of bald eagles varies with latitude. The general tendency is for winter breeding in the South with a progressive shift toward spring breeding in northern locations. In the Southeast, nesting activities generally begin in early September; egg laying begins as early as late October and peaks in late December. The female does most of the nest construction but the male assists. The typical nest is constructed of large sticks with softer materials such as dead weeds, cornstalks, grasses, and sod added as nest lining. Bald eagle nests are very large, sometimes measuring up to 6 feet in width and weighing hundreds of pounds. Many nests are used year after year. Eagles may lay from one to three eggs, but the usual clutch size is two eggs. A second clutch may be laid if the first is lost. Incubation lasts 34 to 38 days. The young fledge 9 to 14 weeks after hatching, but parental care may continue for another 4 to 6 weeks. Bald eagles reach sexual maturity at 4 to 6 years of age. The life span is not known, but it is potentially long since eagles have been known to live for 50 years in captivity.

Range and Population Level: The bald eagle is found throughout North America from northern Alaska and Canada, south to southern California and Florida. Breeding occurs throughout the same area. Nesting in the Southeast occurs in three primary areas peninsular Florida, coastal South Carolina, and coastal Louisiana. Sporadic breeding takes place in the rest of the Southeastern states. During 1993, the number of occupied bald eagle territories in the lower 48 states was estimated at 4,016. An occupied territory indicates activity in a nesting area by a pair of eagles, it does not necessarily mean that the activity resulted in offspring. The number of occupied territories in the Southeast in 1993 was 982. Of those nests, 651 successfully fledged young. In the Southeast, bald eagle populations have increased during the last 13 years. In 1981, the number of eagle territories was

estimated at 396. One of the more notable increases has been the establishment of a few nests in states that once had none. These increases are believed to be a result of the successful hacking program undertaken in the Southeastern United States.

Habitat: The bald eagle is primarily riparian, associated with coasts, rivers, and lakes, usually nesting near bodies of water where it feeds. Selection of nesting sites varies tremendously depending on the species of trees growing in a particular area. In the Southeast, nests are constructed in dominant or codominant pines or cypress. Nests are usually constructed in living trees, but bald eagles occasionally will use dead ones. There are certain general elements that seem to be consistent among nest site selection. These include: (1) the proximity of water (usually within a ½ mile) and a clear flight path to a close point on the water, (2) the largest living tree in a span, and (3) an open view of the surrounding area. The proximity of good perching trees also may be a factor in site selection. An otherwise suitable site may not be used if there is excessive human activity in the area. Bald eagle wintering areas possess many of the same characteristics as nest sites. The birds, however, are not as closely limited to shores at this time, with both adults and immatures gathering food where it is most easily available. Roost sites are an important component of wintering areas. Eagles may roost singly or in groups exceeding 100 birds.

Habitat on National Forests in Florida: Bald eagle habitat exists on the Apalachicola, Osceola, and Ocala NFs. Eagles are known to breed on the Apalachicola and Ocala NFs.

Reasons for Current Status: The major factor leading to the decline of the bald eagle was lowered reproductive success following the introduction of the pesticide DDT in 1947. DDT residues caused eggshell thinning which led to broken eggs. Use of DDT was suspended in 1972 and by the late 1970s eagle populations began to show signs of recovery. Currently, the most significant factor affecting the recovery of the bald eagle in the Southeast is habitat destruction and disturbance by humans. Additional factors in the decline include illegal shooting, electrocution from power lines, impact injuries, and lead poisoning.

Management and Protection: Current protective measures include legal and regulatory measures, captive rearing, and habitat protection and improvement. The bald eagle is protected by Federal laws, which are enforced by both the U.S. Fish and Wildlife Service and State game departments. Nests sites are protected under management programs on such Federal lands as national wildlife refuges and national forests.

Wood Stork (*Mycteria americana*)

Family: Ciconiidae

Status: Endangered - U.S. Breeding Population (*Federal Register*, February 28, 1984)

Description: The wood stork is a large, long-legged wading bird, about 50 inches tall, with a wingspan of 60 to 65 inches. The plumage is white, except for black primaries and secondaries and a short black tail. The head and neck are largely

unfeathered and dark gray in color. The bill is black, thick at the base, and slightly decurved. Immature birds are dingy gray and have a yellowish bill.

Feeding Habits: Small fish from 1 to 6 inches long, especially sunfish and topminnows, provide this bird's primary diet. The wood stork captures its prey by a specialized technique known as grope-feeding or tacto-location. Feeding often occurs in water 6 to 10 inches deep, where a stork probes with the bill partly open. When a fish touches the bill it quickly snaps shut. The average response time of this reflex is 25 milliseconds, making it one of the fastest reflexes known in vertebrates. The wood stork uses thermals to soar as far as 80 miles from nesting to feeding areas. Since thermals do not form in early morning, wood storks may arrive at feeding areas later than other wading bird species such as herons. Energy requirements for a pair of nesting wood storks and their young are estimated at 443 pounds of fish for the breeding season (based on an average production of 2.25 fledglings per nest).

Reproduction and Development: The wood stork is a highly colonial species usually nesting in large rookeries and feeding in flocks. Age at first breeding is 4 years. Nesting periods vary geographically. In south Florida, wood storks lay eggs as early as October and fledge in February or March. However, in north and central Florida, Georgia, and South Carolina, storks lay eggs from March to late May, with fledging occurring in July and August. Nests are frequently located in the upper branches of large cypress trees or in mangroves on islands. Several nests are usually located in each tree. Wood storks also have nested in human-made structures. Storks lay two to five eggs and average two young fledged per successful nest under good conditions.

Range and Population Level: The current population of adult birds is difficult to estimate, since not all nest each year. Presently, the wood stork population is believed to number 11,000 adults. Recent breeding in the United States is restricted to Florida, Georgia, and South Carolina. The birds formerly bred in most of the Southeastern United States and Texas. Another distinct, nonendangered population breeds from Mexico to northern Argentina.

Storks from both populations move northward after breeding, as far as Arkansas and Tennessee in the Mississippi Valley, and North Carolina on the Atlantic coast. There have been occasional sightings in all states east of the Mississippi River, and sporadic sightings in some states west of the Mississippi River and in Ontario.

Habitat: Storks are birds of freshwater and brackish wetlands, primarily nesting in cypress or mangrove swamps. They feed in freshwater marshes, narrow tidal creeks, or flooded tidal pools. Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of falling water levels.

Habitat on National Forests in Florida: Wood stork habitat exists on the Apalachicola, Osceola, and Ocala NFs. Wood storks are known to breed on the Osceola NF.

Reasons for Current Status: The breeding population of the wood stork in the United States declined from an estimated 20,000 pairs in the 1930s to about 10,000 pairs by 1960. Since 1978,

fewer than 5,000 pairs have bred each year. If this trend were to continue, the breeding population in the United States would be near extinction by the turn of the century. The decline is believed to be due primarily to the loss of suitable feeding habitat. This is especially true of south Florida rookeries where repeated nesting failures have occurred despite protection of the rookeries. Feeding areas in south Florida have decreased by about 35 percent since 1900 due to human alteration of wetlands. Also, human-made canals, floodgates, and levees have greatly changed natural water regimes in south Florida. Wood storks have a unique feeding technique and require higher prey concentrations than other wading birds. Optimal water regimes for the wood stork involve periods of flooding, during which prey (fish) populations increase, alternating with dryer periods, during which receding water levels concentrate fish at higher densities coinciding with the stork's nesting season. Loss of nesting habitat (primarily cypress swamps) may be affecting wood storks in central Florida, where nesting in nonnative trees and in human-made impoundments has been occurring recently. Less significant factors known to affect nesting success include prolonged drought and flooding, raccoon predation on nests, and human disturbance of rookeries.

Management and Protection: Large, fully protected colonies in south Florida (Everglades National Park and Corkscrew Swamp Sanctuary) experienced frequent nesting failures in recent years. This is due to adverse water management practices in south Florida. As a result of such drainage, many nesting storks have shifted colony sites to managed or impounded wetlands in central and north Florida. Water management plans must take the needs of the wood stork into account if the species is to survive in these areas. Water level management also may be crucial at rookeries. Flooding may be necessary to stimulate nesting and prevent predators from destroying nests. Periodic drying also may be necessary to prevent trees from dying and to allow recruitment of new trees. At a minimum, for continued survival of the population of wood storks in the United States, currently occupied nesting, roosting, and foraging habitat must be protected from further loss or degradation. A prerequisite for recovery of the population is the restoration and enhancement of suitable habitat throughout the mosaic of habitat types used by this species. Recovery efforts for the wood stork would be more effective with a complete understanding of population biology, movement patterns of United States and neighboring populations of storks, foraging ecology and behavior, the importance of roost sites, and the possible impacts of contaminants.

Red-cockaded Woodpecker (*Picoides borealis*)

Family: Picidae

Status: Endangered (*Federal Register*, October 13, 1970)

Description: The RCW is 18 to 20 centimeters (cm) long with a wing span of 35 to 38 cm. There are black and white horizontal stripes on its back, and its cheeks and underparts are white. Its flanks are black streaked. The cap and stripe on the side of the neck and the throat are black. The male has a small red spot on each side of the black cap. After the first

post-fledgling molt, fledgling males have a red-crown patch. This woodpecker's diet is composed mainly of insects—including ants, beetles, caterpillars, wood-boring insects, and corn earworms if available. About 16 to 18 percent of the diet includes seasonal wild fruit.

Reproduction and Development: Egg laying occurs during April, May, and June with the female utilizing her mate's roosting cavity for a nest. Maximum clutch size is seven eggs with the average being three to five eggs. From egg laying to fledging requires about 38 days, and then another several weeks are needed before the young become completely independent. Most often, the parent birds and some of their male offspring from previous years form a family unit called a group. A group may include one breeding pair and as many as seven other birds. Commonly, these groups are comprised of three to five birds. Rearing the young birds becomes a shared responsibility of the group. However, a single pair can breed successfully without the benefit of the helpers.

Range and Population Level: This bird's range is closely tied to the distribution of southern pines. Historically, the RCW occurred from east Texas and Oklahoma, to Florida, and north to New Jersey. The present distribution is similar, except the species has been extirpated from Missouri, Maryland, and New Jersey. The remaining populations are fragmented into isolated, island populations. Current population level is estimated at 4,500 groups or from 10,000 to 12,000 birds.

Habitat: Open stands of pines with a minimum age of 80 to 120 years, depending on the site, provide suitable nesting habitat. Longleaf pines are most commonly used, but other species of southern pine also are acceptable. Stands that are primarily hardwood, or that have a dense hardwood understory, are avoided. Foraging habitat is provided in pine and pine hardwood stands 30 years old or older with foraging preference for pine trees 10 inches or larger in diameter.

Roosting cavities are excavated in living pines, and usually in those that are infected with a fungus producing what is known as red heart disease. The cavity tree ages range from 63 to 300 plus years for longleaf pine, and 62 to 200 plus years for loblolly and other pines. The aggregate of cavity trees is called a cluster and may include 1 to 20 or more cavity trees on 3 to 60 acres. The average cluster is about 10 acres. Completed cavities in active use have numerous, small resin wells that exude sap. The birds keep the sap flowing apparently as a cavity defense mechanism against rat snakes and possibly other predators. The territory for a group averages about 200 acres, but observers have reported territories running from a low of about 60 acres to an upper extreme of more than 600 acres. The expanse of territories is related to both habitat suitability and population density.

Habitat on National Forests in Florida: The RCW and its habitat exist on the Apalachicola, Ocala, and Osceola NFs.

Reasons for Current Status: The RCW was described by Audubon as being abundant in 1839, but it received little study until around 1970, when investigations began to indicate that the species could be headed for extinction. The decline is attributed primarily to the reduction of pine forest with trees 80 years old and older and to the encroachment of hardwood midstory due to fire suppression. Living pines in this age group, infected with red heart disease,

generally provide the specialized nesting sites that these woodpeckers require.

Management and Protection: Some of the recommendations included in the species' recovery plan are: (1) survey, monitor, and assess the status of individual populations and the species; (2) implement protection and management of nesting and foraging habitat on Federal lands; (3) encourage protection and management on private lands; (4) conduct research on habitat needs and management, population dynamics, and genetic variation; and (5) inform and involve the public.

The USDA Forest Service, U.S. Fish and Wildlife Service, and U.S. Army are all working on comprehensive management and recovery guidelines for their respective Federal properties (national forests, national wildlife refuges, and Army installations) where the bird will be recovered. Additionally, the issues surrounding protection and management of RCWs on private lands are being addressed through a three-part private lands strategy which includes a procedural manual for private landowners, Statewide Habitat Conservation Plans, and Memorandums of Agreement with industrial forest landowners.

American Alligator (*Alligator mississippiensis*)

Family: Alligatoridae

Status: Threatened, due to similarity of appearance to American crocodile

Description: The alligator has a large, lizardlike body, with thick limbs, a broad head, and a very powerful tail which it uses to propel itself through water. The tail accounts for half the alligator's length. The American alligator can be distinguished from the crocodile by its head shape and color. The crocodile has a narrower snout, and, unlike the alligator, has teeth in the lower jaw which are visible even when its mouth is shut. In addition, adult alligators are black, while crocodiles are brownish in color. Alligators will eat just about anything but primarily consume fish, turtles, and snails. Young alligators feed mostly on crustaceans, fish, insects, and snails.

Reproduction and Development: The breeding season begins in the spring. Although alligators have no vocal cords, males bellow loudly to attract mates and warn off other males during this time by sucking air into their lungs and blowing it out in intermittent, deep-toned roars. The female builds a nest of vegetation, sticks, leaves, and mud in a sheltered spot in or near the water. After she lays 20 to 50 white, goose-egg-sized eggs, she covers them under more vegetation, which, like mulch, heats as it decays, helping to keep the eggs warm. She remains near the nest throughout the 65-day incubation period, protecting the nest from intruders. When the young begin to hatch they emit a high-pitched croaking noise, and the female quickly digs them out. The young, which are tiny replicas of adult alligators with a series of yellow bands around their bodies, then find their way to water. For several days they continue to live on yolk masses within their bellies. Alligators reach breeding maturity at about 8 to 13 years of age, at which time they are about 6 to 7 feet long. From then on, growth continues at a slower rate. Old males may grow to be 14 feet long and weigh up to 1,000 pounds during a life span of 30 or more years.

Range: American alligators are found throughout the Southeast, from the Carolinas to Texas and north to Arkansas.

Habitat: American alligators are strongly associated with water. They can be found in ditches, lakes, marshes, ponds, rivers, streams, and even brackish water. American alligators can occur in any wetland habitat.

Habitat on National Forests in Florida: American alligator habitat exists on the Apalachicola, Ocala, and Osceola NFs. They are known to breed on these forests.

Reasons for Current Status: Historically, alligators were depleted from many parts of their range as a result of market hunting and loss of habitat, and 30 years ago many people believed this unique reptile would never recover. In 1967, the alligator was listed as an endangered species (under a law that preceded the Endangered Species Act of 1973), meaning it was considered in danger of extinction throughout all or a significant portion of its range. A combined effort by the U.S. Fish and Wildlife Service and state wildlife agencies in the South saved these unique animals. The Endangered Species Act prohibited alligator hunting, allowing the species to rebound in numbers in many areas where it had been depleted. As the alligator began to make a comeback, states established alligator population monitoring programs and used this information to ensure alligator numbers continued to increase. In 1987, the U.S. Fish and Wildlife Service pronounced the American alligator fully recovered and consequently removed it from the list of endangered species.

Although the American alligator is secure, some related animals—such as several species of crocodiles and caimans—are still in trouble. For this reason, the U.S. Fish and Wildlife Service still regulates the legal trade in alligator skins, or products made from them, in order to protect endangered species of crocodiles and caimans that have skin similar in appearance to alligators.

Eastern Indigo Snake (*Drymarchon corais couperi*)

Family: Colubridae

Status: Threatened (*Federal Register*, January 31, 1979)

Description: The eastern indigo snake is a large, docile, nonpoisonous snake growing to a maximum length of about 8 feet. The color in both young and adults is shiny bluish-black, including the belly, with some red or cream coloring about the chin and sides of the head.

The indigo snake subdues its prey (including venomous snakes) through the use of its powerful jaws, swallowing its prey usually while it is still alive. Food items include snakes, birds, frogs, salamanders, small mammals, toads, and occasionally young turtles.

Reproduction and Development: Indigo snakes probably reach sexual maturity at 3 to 4 years of age. Based on observations of captive indigos at Auburn University, Alabama, mating begins in November, peaks in December, and continues into March. Clutches averaging eight to nine eggs laid in late spring, hatch about 3 months later. The snakes remain active to some degree throughout the winter, often emerging from their dens whenever air temperatures exceed 50 degrees Fahrenheit.

Range: This species is currently known to occur throughout Florida and in the coastal plain of Georgia. Historically, the range also included southern Alabama, southern Mississippi, and the extreme southeastern portion of South Carolina.

Habitat: The indigo snake seems to be strongly associated with high, dry, well-drained sandy soils, closely paralleling the sandhill habitat preferred by the gopher tortoise. During warmer months, indigo snakes also frequent streams and swamps, and some occasionally are found in flatwoods. Gopher tortoise burrows and other subterranean cavities are commonly used as dens and for egg laying.

The home range of indigo snakes varies considerably according to season. Based on a study conducted in southwest Georgia, Speake et al. (1978) reported an average seasonal range of 4.8 hectares during the winter (December through April), 42.9 hectares during late spring or early summer (May through July), and 97.4 hectares during late summer and fall (August through November). The most extensive monthly movements occurred during August. Of a total of 108 den sites located, 77 percent were in gopher tortoise burrows, 18 percent were in or under decayed stumps and logs, and 5 percent were under plant debris. The study area included windrows of debris piled up in the 1960s during site preparation for a slash pine plantation. The snakes showed some tendency to prowl and locate their dens near these windrows.

Habitat on National Forests in Florida: Eastern indigo snake habitat exists on the Apalachicola, Ocala, and Osceola NFs.

Reasons for Current Status: The decline is attributed to a loss of habitat due to such uses as construction, farming, forestry, pasture and to overcollecting for the pet trade. The snake's large size and docile nature have made it much sought after as a pet. The effect of ``Rattlesnake Roundups'' on the indigo snake are speculative. Both indigo snakes and rattlesnakes utilize the burrows of gopher tortoises at certain times. Rattlesnake hunters often pour

gasoline down these burrows to drive out the snakes. While some indigo snakes may be killed by this practice, the actual degree of impact on the population is unknown.

Sand Skink (*Neoseps reynoldsi*)

Family: Scincidae

Status: Threatened (*Federal Register*, November 6, 1987)

Description and Reproduction: A unique lizard adapted to an underground existence, the sand skink measures 10 to 13 cm (4 to 5 inches) in length and has a gray to tan color. Its forelegs are tiny and bear only one toe; its hind legs are small and have two toes. The tail comprises about half of the animal's total length. The sand skink has a wedge-shaped head, a partially countersunk lower jaw, body grooves into which the forelegs can be folded, and small eyes that have transparent windows in the lower lids. These features enable the lizard to swim beneath the surface of loose sand. The diet of this species consists of surface-dwelling invertebrates, including beetle larvae, larval antlions, spiders, and termites.

Range and Population Level: The sand skink occurs in Highlands, Lake, Marion, Orange, and Polk Counties, Florida. Records kept by the Florida Natural Areas Inventory indicate that the species occurs at a minimum of 31 sites.

Habitat: The sand skink exists in areas vegetated with sand pine-rosemary scrub or a longleaf pine-turkey oak association. Food supply and moisture are important factors in the species' selection of habitat. Sand skinks are most frequently found in the ecotone between rosemary scrub and palmetto-pine flatwoods where moisture is present beneath the surface litter (e.g., bark) and in sand starting at a depth of 2 cm or 1 inch. The species usually remains underground and burrows 5 to 10 cm beneath the soil to find its nourishment.

Habitat on National Forests in Florida: Sand skink habitat exists on the Ocala NF.

Reasons for Current Status: Habitat destruction is the primary threat to the sand skink's survival. Citrus groves, and residential, commercial, and recreational facilities have depleted the xeric upland habitat of skinks. In the southern Lake Wales ridge where most of the sand skink's habitat still remains, 64 percent of the area was developed by 1981. Wildland fire suppression or land-use changes pose secondary threats to the species. Lack of periodic fire in sand pine scrub and longleaf pine communities, without a substitute means of controlling succession, eventually will turn these communities into scrub or hardwoods making them unsuitable for the sand skink. An additional 10 percent of this area has been moderately disturbed.

Management and Protection: The Nature Conservancy and Florida Department of Natural Resources are trying to acquire scrub habitat to support the sand skink and other listed species. On newly acquired sandhill and scrub habitats, well-drained sands with open areas free of rooted vegetation may be beneficial for sand skinks. Campbell and Christman (1982) found that the sand skink populations in Ocala NF were most abundant in early successional stages of sand pine scrub. Clearcutting and even-aged stand management of sand pines in Ocala NF appear to have maintained the conditions equivalent to the natural fire regime (from 1 to 8 years). Although sand skinks benefit from the opening and clearing of sand pine communities, it may be important to leave widely scattered surface litter when clearcutting.

Flatwoods Salamander (*Ambystoma cingulatum*)

Family: Ambystomatidae

Status: Proposed Threatened (*Federal Register*, December 16, 1997)

Description: The flatwoods salamander is about 13 cm in total length with a stout body and small head. Coloration is silvery gray to nearly black with a highly variable pattern. The back and tail are heavily mottled with black to dark brown, irregular blotches. The belly is plain gray to black, with a few creamy or gray blotches. Larvae are long and slender, with a black to brown body with yellowish longitudinal stripes and a white belly and striped sides. The gills are bushy.

Reproduction: Reproduction occurs in small ephemeral water bodies in pine flatwoods. Breeding normally occurs from October to January on rainy evenings. Hatching occurs within 48 hours of egg laying. Metamorphosis occurs about 90 days after hatching. Most individuals leave the ponds around March or April.

Range and Population Level: Flatwoods salamanders are endemic to the lower southeastern coastal plain, with historic occurrences in Alabama, Florida, Georgia, and South Carolina. Currently, flatwoods salamanders have not been found at 88 percent of its historical localities despite extensive surveys.

Habitat on National Forests in Florida: Flatwoods salamander habitat exists on the Apalachicola and Wakulla RDs and Osceola NFs. They are known to breed on the Apalachicola RD and Osceola NF.

Habitat: Flatwoods salamanders occur in frequently wet or flooded pine flatwoods/ wiregrass habitats and require aquatic sites devoid for predatory fish for breeding. These salamanders may range more than 1,700 meters (1 mile) from their natal ponds.

Reasons for Current Status: Loss of habitat due to detrimental silvicultural practices, lack of proper prescribed fire, development, draining, ditching, and agriculture have reduced the amount of habitat available to flatwoods salamanders.

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

Family: Acipenseridae

Status: Threatened (*Federal Register*, September 30, 1991)

Description: Gulf sturgeon, also known as the Gulf of Mexico sturgeon, is a subspecies of the Atlantic sturgeon. It is a large fish with an extended snout, vertical mouth, chin barbels, and with the upper lobe of the tail longer than the lower. Adults are 180 to 240 centimeters in length, with adult females larger than adult males. The skin is scaleless, brown dorsally and pale ventrally and imbedded with five rows of bony plates.

Adult fish are bottom feeders, eating primarily invertebrates—including brachiopods, crustaceans, insect larvae, mollusks, and worms. The gulf sturgeon is anadromous, with reproduction occurring in freshwater. Most adult feeding takes place in the Gulf of Mexico and its estuaries.

Reproduction: Breeding takes place in river systems, with adults returning to the same river systems in which they hatched in order to breed. Spawning is believed to occur in areas of deep water with clean (gravel, rock, or sand) bottoms. The eggs are sticky and adhere in clumps or strings to snags, outcroppings, or other clean surfaces. Sexual maturity is reached between the ages of 8 and 12 years for females and 7 and 10 years for males.

Range and Population Level: Historically, gulf sturgeon occurred from the Mississippi River to Tampa Bay, Florida. It still occurs, occasionally, throughout this range, but in greatly reduced numbers. The fish is essentially confined to the Gulf of Mexico, possibly because this portion of the gulf has predominantly hard bottoms that are better suited to the gulf sturgeon's feeding habitat.

Habitat on National Forests in Florida: Apalachicola NF is the only forest with potential habitat for gulf sturgeon. The Apalachicola River runs adjacent to the forest, and the Ochlockonee River runs through the forest.

Reason for Current Status: The gulf sturgeon's decline was likely caused by exploitation and habitat destruction. Three major rivers (the Pearl in Mississippi, the Alabama in Alabama, and the Apalachicola in Florida) within the range of the gulf sturgeon have been dammed, preventing use of upstream areas for spawning. The gulf sturgeon is apparently unable to pass through dam systems. In addition to the structures preventing gulf sturgeons from reaching spawning areas, dredging, desnagging, and spoil deposition carried out in connection with channel improvement and maintenance represent a threat to the gulf sturgeon. Modification of such features, especially in rivers in which upstream migration is limited by dams, could further jeopardize the reduced stocks of the gulf sturgeon.

Fat Three-Ridge Mussel (*Amblema neislerii*)

Status: Endangered (*Federal Register*, March 16, 1998)

Description: The fat three-ridge mussel is medium-sized to large, subquadrate, inflated, solid, and heavy shelled. It reaches a length of 102 mm (4.0 inches). Older, larger individuals are so inflated that their width approximates their height. The umbos are in the anterior quarter of the shell. The dark brown to black shell is strongly sculptured with seven to nine prominent horizontal parallel ridges. Internally, there are two subequal pseudocardinals in the left valve and typically one large and one small tooth in the right valve. The nacre is bluish white to light purplish and very iridescent.

Range: An Apalachicola River system endemic, the fat three-ridge mussel is restricted to the Flint River in Georgia and the Apalachicola and Chipola Rivers in Florida. In the Apalachicola River, it is known from two localities in Calhoun and Gadsden Counties, Florida. Its distribution in the Chipola River extends from Scott's Ferry in Calhoun County, Florida, downstream to Wewahitchka in Gulf County.

Habitat: The fat three-ridge mussel inhabits the main channel of small to large rivers in slow to moderate current. Substrate varies from gravel and rocky rubble to a mixture of sand and sandy mud.

Life History and Ecology: Unknown. The fat three-ridge mussel most likely does not tolerate impoundments.

Basis for Status Classification: The restriction of fat three-ridge mussel to the main channels of the Chipola and Apalachicola Rivers makes it vulnerable to a variety of environmental perturbations. The most serious threat is probably maintenance dredging in the Apalachicola River. High population levels of the Asian clam (*Corbicula fluminea)* also may be adversely affecting fat three-ridge mussel.

Purple Bankclimber Mussel (*Elliptoideus sloatianus*)

Status: Threatened (*Federal Register*, March 16, 1998)

Description: The purple bankclimber is the second largest freshwater mollusk in Florida, attaining a length of 203 mm (8 inches). Its brownish black to black shell is subrhomboidal, moderately inflated, heavy, and strongly sculptured. A well-developed posterior ridge extends from the umbos to the posterior ventral margin of the shell. The posterior slope and the disk just anterior to the posterior ridge are sculptured by several irregular ridges that vary greatly in development. Umbos are low, extending just above the dorsal margin of the shell. Internally, there is one pseudocardinal tooth in the right valve and in the left valve. The lateral teeth are very thick and slightly curved. Nacre color is whitish near the center of the shell, becoming deep purple toward the margin, and very iridescent posteriorly.

Range: The purple bankclimber mussel known only from the Apalachicola River system in Alabama, Georgia, and Florida and from the Ochlockonee River in Florida. Historically, it occurred in the Chattahoochee River upstream to Columbus, Georgia, but has not been collected in that river since the mid-1800s. It has been collected in the Flint River, an Apalachicola River tributary, in Georgia in recent years. In Florida, it occurs in the Apalachicola River below Jim Woodruff Dam downstream in the vicinity of the U.S. Highway 90 crossing at Chattahoochee, Gadsden County. Records from the Chipola River are from Dead Lake, Calhoun County. In the Ochlockonee River, it is known from three localities west and northwest of Tallahassee, in Gadsden and Leon Counties.

Habitat: The purple bankclimber mussel inhabits small to large rivers in slow to moderate current over sand or sand mixed with mud and gravel substrates.

Life History and Ecology: Unknown. The purple bankclimber mussel most likely does not tolerate impoundments.

Basis for Status Classification: This species is confined to the Apalachicola and Ochlockonee river systems. In the Apalachicola River it is known only from the area below Jim Woodruff Dam downstream for a distance of about 1.5 kilometers (1 mile). While it has been found living in this area in recent years, the population has been dominated by very large, old individuals. It has not been found in the Chipola River since the 1950s, so its current status in this system is unknown. In the Ochlockonee River, the purple bankclimber appears to be confined to the upper reaches of the river, above Lake Talquin in Gadsden and Leon Counties. Based on observations during

the past 15 years, populations in this area appear stable. Continued success of the Ochlockonee River population mostly depends on good water quality from the headwaters in southwest Georgia. Habitat alteration resulting from maintenance dredging in the Apalachicola River is a threat to the purple bankclimber mussel. The proposed threatened status for the purple bankclimber mussel is based on its restricted distribution, the uncertainty of the Chipola River population, and the age structure of the population in the Apalachicola River.

Shiny-Rayed Pocketbook (*Lampsilis subangulata*)

Status: Endangered (*Federal Register*, March 16, 1998)

Description: The shiny-rayed pocketbook is a medium-sized mussel that reaches approximately 85 mm (3.3 inches) in length. The shell is subelliptical, with broad, somewhat inflated umbos and a rounded posterior ridge. The fairly thin, but solid, shell is smooth and shiny and light yellowish brown with fairly wide bright emerald green rays over its entire length. Older individuals appear much darker brown with obscure raying. Internally, the pseudocardinal teeth and one spatulate tooth in the right valve. The nacre is white, with some individuals exhibiting a salmon tint in the vicinity of the umbonal cavity.

Range: The shiny-rayed pocketbook historically occurred in the Apalachicola, Chipola, Chattahoochee, Flint, and Ochlockonee river systems.

Habitat: The shiny-rayed pocketbook inhabits medium-sized creeks to large rivers in slow to moderate current over clean or silty sand substrates.

Life History and Ecology: The shiny-rayed pocketbook most likely does not tolerate impoundments.

Basis for Status Classification: The shiny-rayed pocketbook presently occupies about two-thirds of its original range. Recent collections are generally represented by only a few individuals, and evidence of reproduction is scarce.

Gulf Moccasinshell (*Medionidus penicillatus*)

Status: Endangered (*Federal Register*, March 16, 1998)

Description: The gulf moccasinshell is a small mussel, reaching a length of about 55 mm (2.2 inches), is elongate-elliptical or rhomdoidal in shape and fairly inflated, and has relatively thin valves. The ventral margin is nearly straight or slightly rounded. The posterior ridge is rounded to slightly angled and intersects the end of the shell at the baseline. Females tend to have the posterior point above the ventral margin and are somewhat more inflated than males. Sculpturing consists of a series of thin, radially oriented plications along the length of the posterior slope. The remainder of the shell surface is smooth and yellowish to greenish brown with fine, typically interrupted green rays. The left valve has two stubby pseudocardinal and two arcuate lateral teeth and the right

valve has one pseudocardinal and one lateral tooth. Nacre color is smoky purple or greenish and slightly iridescent at the posterior end.

Range: The gulf moccasinshell historically occurred in the Flint, Chattahoochee, Apalachicola, and Chipola river systems.

Habitat: The gulf moccasinshell inhabits medium-sized creeks to large rivers in slow to moderate current over sand and gravel substrates.

Life History and Ecology: Very little is known about gulf moccasinshell. It most likely does not tolerant impoundments.

Basis for Status Classification: The gulf moccasinshell has been eliminated from about three-quarters of its original range.

Ochlockonee Moccasinshell (*Medionidus simpsonianus*)

Status: Endangered (*Federal Register*, March 16, 1998)

Description: Ochlockonee moccasinshell is a small species, generally under 55 mm (2.5 inches) in length. It is slightly elongate-elliptical in outline with the posterior end obtusely rounded at the shell's median line and ventral margin broadly curved. The posterior ridge is moderately angular and its entire length is covered with well-developed, irregular ridges. Sculpturing may extend onto the disk below the ridge and the surface texture is smooth. The color is light brown to yellowish green, with dark green rays formed by a series of connecting chevrons or undulating lines across the length of the shell. Internal characters include thin straight lateral teeth and compressed pseudocardinal teeth. There are two laterals and two pseudocardinals in the left valve and one lateral and one pseudocardinal in the right valve. The nacre is bluish white.

Range: The Ochlockonee moccasinshell was known historically from the Ochlockonee River and its tributary the Little River.

Habitat: The Ochlockonee moccasinshell inhabits large creeks to medium-sized rivers in moderate current over substrates of sand with some gravel.

Life History and Ecology: Unknown. Most likely does not tolerate impoundments.

Basis for Status Classification: Despite great effort by numerous investigators only two live specimens have been located since 1974. Once a fairly common species, with some population numbering in the dozens of individuals, the Ochlockonee moccasinshell is now one of the rarest mussels in North America.

Oval Pigtoe (*Pleurobema pyriforme*)

Status: Endangered (*Federal Register*, March 16, 1998)

Description: The oval pigtoe is a small to medium-sized mussel that attains a length of about 60 mm (2.4 inches). The shell is suboviform compressed, with a shiny smooth epidermis. The periostracum is yellowish, chestnut, or dark brown, rayless, and with distinct growth lines. The posterior slope is biangulate and forms a blunt point on the posterior margin. The umbos are slightly elevated above the hinge line. As is typical of the genus, no sexual dimorphism is displayed in shell characters. Internally the pseudocardinal teeth are fairly large, crenulate and double in both valves. The lateral teeth are somewhat shortened, arcuate and double in each valve. Nacre color varies from salmon to bluish white and is iridescent posteriorly.

Range: Historically the oval pigtoe occurred in the Flint, Chipola, Chattahoochee, Ochlockonee, Suwannee, Santa Fe, and Econfina river systems. Fifty-four total historical sites are known.

Habitat: The oval pigtoe inhabits medium-sized creeks to small rivers in slow to moderate current over silty sand to sand and gravel substrates.

Life History and Ecology: Unknown. Oval pigtoe most likely does not tolerate impoundments.

Basis for Status Classification: Recent surveys have found that the oval pigtoe

has been extirpated from approximately two-thirds of its historical range.

Apalachicola Rosemary (*Conradina glabra*)

Family: Lamiaceae (mint family)

Status: Endangered (*Federal Register*, July 12, 1993)

Description and Reproduction: The branches of Apalachicola rosemary are spreading or upright. The leaves are evergreen, opposite, with additional leaves in short shoots in the axils giving the appearance of fascicles. The leaves are needle-like. Apalachicola rosemary flowers from March to June and then intermittently until frost. The flowers are usually in groups of two or three. The calyx and corolla are two-lipped. The corolla is 1.5 to 2.0 cm (0.5 to 0.75 inches) long from its base to the tip of its longest lobe with a slender corolla tube that is straight for about 5 mm then bends sharply downward to form a funnel-shaped throat 5 mm long, then widens out into upper and lower lips. The outside of the tube and throat are white with the lobes and lips lavender blue at the tips. The lower lip of the corolla is three-lobed with a band of purple dots extending along its inner side. The four stamens are paired. Many flowers are male sterile. In extreme cases, the stamens are grossly malformed, being petaloid in shape, texture, and color.

Range and Population Level: Apalachicola rosemary occurs in an area of several square miles in Liberty County, Florida. Part of the species range is incorporated in public and private nature preserves that protect the rich hardwood forests which are inhabited by the narrowly endemic Florida torreya (*Torreya taxifolia*), also federally listed as endangered), and the Florida yew (*Taxus floridana*). Most Apalachicola rosemary, however, occurs on commercial timberland. Currently, the plant is known from seven sites. The population estimate is greater than 10,000 individual plants.

Habitat: Populations are located in a gently undulating upland originally with longleaf pine-wiregrass vegetation, dissected by ravines of the Sweetwater Creek system, which drain westward to the Apalachicola River. A lot of the area has been converted to sand pine plantations. Apalachicola rosemary currently is found on road edges, in planted pine plantations and along their cleared edges, and along the edges of the ravines.

Reasons for Current Status: Apalachicola rosemary is a narrowly distributed species that was originally restricted to a specialized habitat, the edges of steephead ravines, and possibly also to upland longleaf pine-wiregrass vegetation. The plant appears to require full sunlight or light shade. Planted pine trees are likely, by the time they mature, to produce dense shade that could kill this species. Another possible problem in planted pine stands is that sand pine (currently grown in the area) does not tolerate prescribed fire, which may help keep habitat open for Apalachicola rosemary.

Harper's Beauty (*Harperocallis flava*)

Family: Liliaceae

Status: Endangered (*Federal Register*, October 2, 1979)

Description and Reproduction: Harper's beauty is a rhizomatous, perennial herb. Its leaves are stiff and grassy, 5 to 21 centimeters tall. Each plant bears a single flower on a stalk much longer than the leaves. Each flower has six petals, yellow above and greenish beneath. The petals are 9 to 15 mm long, spreading when the plant is in flower, erect when in fruit. The petals become entirely green when the plant is in fruit. There are six stamens: the ovary is superior, three-lobed, and ellipsoid; and there are three styles.

The plant is easily identified when in flower. The flower is typical of the lily family (six petals, six stamens, superior ovary), and its solitary, yellow flowers readily distinguish it from all other members of the family in the area. Flowering occurs from mid-April through May and fruits are mature in July. Dispersal mechanisms and pollinators have not been studied. Vegetative reproduction is by rhizomes.

Range and Population Level: All known locations are within the Apalachicola NF. Recent surveys have extended the range and number of known locations. There are currently between 15 and 20 groups of plants depending on how the groups are distinguished. All locations are in the southwest portion of the Apalachicola RD, generally south of Wilma.

Habitat: Harper's beauty has been found in open pineland bogs and along moist roadside ditches. It seems to be most closely associated with buckwheat tree (*Cliftonia monophylla*) and odorless bayberry (*Myrica inodora*), or less frequently, when in wetter situations, with trumpet pitcher plant (*Sarracenia flava*), parrot pitcher plant (*S. psittacina*), and pleea (*Pleea tenuifolia*). Pond pine is the most prevalent tree species associated with these bog habitats. Without occasional fires to eliminate competing herbs and shrubs, natural succession could possibly eliminate the plant from its present locations.

Reasons for Current Status: The plant's limited range makes it highly vulnerable to loss. Changes in current land management, accidental loss, vandalism, or overcollecting could easily lead to the extinction of this species.

The Forest Service and the Florida Department of Transportation are cooperating to maintain an appropriate mowing schedule for the roadside populations. Harper's beauty plants in native vegetation are being monitored, and other sites are being searched. Experimental transplants of plugs of sod containing Harper's beauty appear successful.

White Birds-in-a-Nest (*Macbridea alba*)
Florida Skullcap (*Scutellaria floridana*)

Families: White birds-in-a-nest - Lamiaceae (*Labiatae*) and Florida skullcap - Scrophulariaceae

Status: Threatened (*Federal Register*, May 8, 1992)

Description and Reproduction: White birds-in-a-nest is an upright, usually single-stemmed, odorless perennial herb with fleshy rhizomes. It is about 30 to 40 cm (1 foot) tall with opposite leaves up to 10 cm (4 inches) long, 1 to 2 cm (0.5 to 1

inches) broad, with winged petioles. With one exception, all the plants at a site are either smooth or hairy. The flowers are clustered at the top of the plant in a short spike with bracts. Each flower has a green calyx about 1 cm (0.5 inch) long and a brilliant white corolla 3 cm (1 inch) long. The corolla is two-lipped, the upper lip hoodlike. Flowering is from May into July. In flower, white birds-in-a-nest is conspicuous and unmistakable.

Florida skullcap is a perennial herb with swollen storage roots. Its stems are quadrangular and sparingly branched, solitary or in small groups. The leaves are opposite, 2 to 4 cm (1 to 1.5 inches) long, linear, with the margins strongly inrolled and a blunt, purplish tip. The flowers are solitary in the axils of short leafy bracts. Flower stalks are 5 mm (0.2 inches) or less long. The flower has a bell-shaped calyx with a cap or scutellum on its upper side. The corolla is bright lavender blue, at least 2.5 cm (1 inch) long, with a throat and an upper and lower lip. The lower lip is white in the middle. Flowering is in May and June.

Range and Population Level: The range of white birds-in-a-nest is in Bay, Franklin, Gulf, and Liberty Counties, Florida. The Apalachicola NF has the most vigorous populations, with the largest numbers of individuals of this species.

Florida skullcap is known from 11 sites in Franklin, Gulf, and Liberty Counties, including sites in the Apalachicola NF.

Habitat: These two plant species are restricted to the gulf coastal lowlands near the mouth of the Apalachicola River, roughly from the southwestern part of Apalachicola NF west to the vicinity of Panama City. These plant species inhabit grassy vegetation on poorly drained, infertile sandy soils. The wettest sites occupied by these plants are grassy seepage bogs on gentle slopes at the edges of forested or shrubby wetlands. Less permanently wet sites are savannahs (also called grass-sedge bogs or wet prairies), which are nearly treeless and shrubless but have rich floras of grasses, sedges, and herbs. Both species occur in seepage bogs and savannahs. Florida skullcap is most commonly found in seepage bog communities or savannahs near the edges of included wetlands such as bay stringers. Its habitat requirements are more restricted than those for white birds-in-a-nest. White birds-in-a-nest occurs sparingly on drier sites with longleaf pine and runner oaks (mesic flatwoods).

Reasons for Current Status: Silvicultural practices affect these species. Site preparation that precedes tree planting may destroy these plants, although populations may recover in the sunny understory of young pine stands. As plantations mature and become shady, these plants appear to die out.

In Florida, prescribed fire generally has been applied in the dormant season, but pineland herbs may thrive better under a regime of growing-season burns. It is not yet clear whether white birds-in-a-nest prefers dormant- or growing-season fires. Florida skullcap reacts positively to growing-season fire and appears to require fire to remain vigorous.

The recorded occurrences of white birds-in-a-nest provide evidence that this species has declined in most of its range. Although the plant occurs in four counties, most of its localities are in the Post Office Bay area of the Apalachicola NF. The present distribution of existing white birds-in-a-nest plants indicates that this species has declined severely outside the national forests, because it is unlikely that

the national forest originally had the most, or the largest populations of, white birds-in-a-nest. The forest is at the edge of this plant's range and areas southwest of the national forest have richer floras of endemic plants. The present distribution and abundance of white birds-in-a-nest is consistent with Godfrey's (1979) assertion that ``modern forestry practices are destroying this species," and Kral's (1983) opinion that drainage, lack of fire, and mechanical site preparation for tree planting reduces or eliminates this and other species including Chapman's crownbeard (*Verbesina chapmanii*), thick-leaved waterwillow (*Justicia crassifolia*), and Florida skullcap. Florida skullcap is a rarer plant than white birds-in-a-nest, so forestry activities would seem to affect it more seriously.

The Forest Service conducts prescribed burns during the growing season. This practice may favor white birds-in-a-nest and other herbs. Most private land is planted with slash pine, which is not burned in the seedling stage. Forest Service management practices are intended to benefit white birds-in-a-nest, Florida skullcap, and other sensitive species including the endangered Harper's beauty (*Harperocallis flava*).

Godfrey's Butterwort (*Pinguicula ionantha*)

Family: Lentibulariaceae (bladderwort family)

Status: Threatened (*Federal Register*, July 12, 1993)

Description and Reproduction: The bladderwort family, a small family of carnivorous plants, is closely related to the snapdragon family (*Scrophulariaceae*). Godfrey's butterwort has a rosette of fleshy, oblong, bright green leaves that are rounded at their tips with only the edges rolled upward. The rosette is about 15 cm (6 inches) across. Short, sticky glandular hairs on the upper surfaces of the leaves capture insects. The flowers are borne on leafless stalks about 10 to 15 cm tall. A fully opened flower's corolla is about 2 cm (0.8 inches) across. The five corolla lobes are pale violet to white. The throat of the corolla and the corolla tube are deeper violet with dark violet veins. A yellow to olive spur 4 to 5 mm long is present on the corolla.

Range and Population Level: Godfrey's butterwort is found near the gulf coast in the Florida panhandle between Tallahassee and Panama City (Godfrey and Wooten 1981, Florida Natural Areas Inventory). It is locally abundant in Apalachicola NF.

Habitat: Godfrey's butterwort inhabits seepage bogs on gentle slopes, deep quagmire bogs, ditches, and depressions in grassy pine flatwoods and grassy savannas. It often occurs in shallow standing water. In Franklin County, it occurs at a savannah with a particularly

rich flora, including white birds-in-a-nest (*Macbridea alba*) and Florida skullcap (*Scutellaria floridana*), both federally listed as threatened species.

Reasons for Current Status: This plant has a limited geographic distribution. Within its range, it has been collected or observed at only 20 localities. It is threatened by habitat degradation due to lack of prescribed fire and shading by planted pines. This plant does not tolerate shade and according to Kral (1983), canopy closure in pine plantations may result in loss or diminishment of the species until the next harvest.

Florida Bonamia (*Bonamia grandiflora*)

Family: Convolvulaceae

Status: Threatened (*Federal Register*, November 2, 1987)

Description and Reproduction: The only morning glory vine with large, blue flowers in Florida scrub vegetation, Florida bonamia is a perennial with sturdy prostrate stems about a meter (3 feet) long. The leathery oval or ovate leaves, up to about 4 cm (1.6 inches) long, are either upright or spreading. The flowers are solitary in the leaf axils. The funnel-shaped corolla is 7 to 10 cm (2.7 to 3.9 inches) long and 7 to 8 cm (2.7 to 3.1 inches) across, pale but vivid blue with a paler center, similar to the cultivated ``Heavenly Blue'' morning glory. The fruit is a capsule.

Range and Population Level: Florida bonamia is endemic to the peninsula where most of its known populations exist in the Ocala NF, Marion County. It also occurs south of the forest in Hardee County, Highlands County, Orange County, and Polk County. It was relocated in Lake County south of Lakes Minnehaha and Susan and in Manatee County. The historic range of Florida bonamia was from central Highlands County northward through northwestern Osceola, western Orange, Lake, eastern Marion, and northwestern Volusia Counties on ridges and uplands of the central peninsula. Urban and agricultural development, especially citrus groves, have extirpated the plant from most of its former range.

Habitat: Florida bonamia's habitat is sand pine scrub vegetation with evergreen scrub oaks and sand pine. Sunny openings in the vegetation are occupied by herbs, lichens, and reindeer moss (Cladonia). In the Ocala NF, where most of its remaining populations exist, Florida bonamia is restricted to these bare, sunny, sand areas, including the margins of sand pine stands on road rights-of-way, fire lanes, and other places that are kept clear of trees and shrubs. Florida bonamia also occurs in clearcut areas in the Ocala NF.

Reasons for Current Status: Habitat destruction from agricultural or urban development is the main threat to Florida bonamia. For example, the five known sites of the plant in Orange County are located on small remnants of scrub vegetation or vacant lots surrounded by homes or orange groves west and southwest of Orlando, one of the fastest growing areas in the United States. In Hardee, Highlands, Orange, and Polk Counties, remnant populations are highly susceptible to obliteration of the vegetation for citrus groves and residences (despite protection of the federally threatened Florida scrub-jay in the same habitat). Florida bonamia is also

susceptible to trash dumping, invasion by exotic plants and weeds, and damage from off-road vehicles.

Normal ecological succession also poses a threat to Florida bonamia unless the habitat is kept open by occasional fires or equivalent mechanical land disturbance. The State of Florida currently lists this plant as endangered, but the law does not provide for habitat protection. Ocala NF populations are listed on the Regional Forester's Proposed Sensitive List, and receive both protection and management.

Management and Protection: Populations of Florida bonamia in the Ocala NF appear to be large and quite secure. The species may be spreading from a limited original range within the forest. The distribution (as mapped from roads) is roughly oval-shaped and does not seem to coincide with any changes in vegetation or soils, suggesting that the distribution may reflect expansion of the plant's range along roads. Current and planned management practices (intended in part to conserve the Florida scrub-jay) ensure an abundance of the plant's early successional habitat.

Hartnett and Richardson (1989) have shown that Florida bonamia has long-lived fleshy root systems that enable the plant to recover rapidly after fires, and that the plant also maintains substantial seed banks in the soil.

Scrub Buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*)

Family: Polygonaceae (jointweed family)

Status: Threatened (*Federal Register*, April 27, 1993)

Description and Reproduction: Scrub buckwheat is a perennial herb with a single stem that grows from a stout, woody root. Most of the leaves are narrowly oblanceolate, entire, 15 to 20 cm long, are located at the base of the stem, and are green or bronze-green above and densely white-woolly beneath. Leaves on the stem are smaller and arranged alternately. The stem is erect, up to 1 meter tall, and terminates in an open panicle. Each branch of the panicle ends in a cup-shaped involucre with five to eight teeth about 5 mm long. Inside each involucre, 15 to 20 flowers form a cluster. The stalk of each flower starts out erect and then relaxes so that the flowers hang down below the involucre. Each flower is 6 to 8 millimeters long and has six linear sepals. The involucre and flowers are silvery, silky pubescent.

Range and Population Level: The northern range limit for scrub buckwheat is in Ocala NF and areas of mixed scrub and high pine south of Ocala in Marion County. It historically occurred near Eustis in Lake County, and it still occurs near Clermont in remnants of high pine with small Lewton's milkwort (*Polygala lewtonii*). It also occurs at other scattered localities, including southwest Orange County, the northwest corner of Osceola County, and on the Lake Wales Ridge in Polk and Highlands Counties as far south as the Archbold Biological Station south of Lake Placid.

Habitat: It occurs in habitats intermediate between scrub and sandhills (high pine) and in turkey oak barrens from Marion County to Highlands County.

Reasons for Current Status: Loss of habitat to agricultural and residential development. This plant's habitat is also vulnerable to degradation due to inadequate or wrongly timed fire.

Small Lewton's Milkwort (*Polygala lewtonii*)

Family: Polygalaceae (milkwort family)

Status: Endangered (*Federal Register*, April 27, 1993)

Description and Reproduction: Small Lewton's milkwort is a perennial herb with a taproot. Each plant produces one to several annual stems that are upward-curving, spreading or erect, and are often branched. The leaves resemble shingles because they are small, sessile, rather succulent, broader toward the tip, are borne upright, and tend to overlap along the stem. The normally open flowers are in erect, loosely flowered racemes up to 1.5 cm long. The flowers are about 0.5 cm long and are bright pink or a purplish red. Each flower is about 3.5 mm long.

Range: Small Lewton's milkwort has been collected in Highlands, Lake, Marion, Osceola, and Polk Counties in central Florida.

Habitat: Small Lewton's milkwort occurs most frequently in habitats intermediate between high pineland (i.e., longleaf pine on uplands) and scrub as well as in both habitats.

Reasons for Current Status: Future real estate development is the primary threat to Lewton's polygala. Serious loss of habitat already has occurred due to agriculture

(citrus groves and pastures) and residential development.

Effects of Revised Plan Implementation

The *Land and Resource Management Plan for the National Forests in Florida* (Forest Plan) is a programmatic document that provides management direction for the forests for the next planning period (10 to 15 years). The Forest Plan can be amended during the planning period if new information or issues come to light. The disclosure of effects from Forest Plan implementation will relate to the probable activities and the standards and guidelines disclosed in the Forest Plan. All activities will adhere to the individual species recovery plans and habitat management guidelines, unless otherwise noted. The effects of individual projects (timber sales, recreation projects, habitat improvement projects, road projects, etc.) will be documented in a site-specific evaluation of the individual projects.

Florida Panther

The Florida panther is currently not known to occur on the national forests in Florida. There have been numerous reports of Florida panther sightings in the past, but none have ever been confirmed to be a resident Florida panther.

The 1987 Florida Panther Recovery Plan identified the national forests as potential reintroduction sites for Florida panthers. Western cougars have been released in a controlled fashion on and around the Osceola NF to determine its feasibility as a reintroduction site.

The management activities in the Forest Plan will not degrade the national forests as potential reintroduction sites. The largest factor affecting the potential of the forests as reintroduction sites is the growth and development surrounding the forests. This affects connections to other suitable habitat areas, increases human/panther conflicts, and increases road densities and service levels which increases potential mortality from vehicle collisions. These factors are all outside the scope of the Forest Plan. Forest Plan standard LA-2 gives high priority to the acquisition of habitat for proposed, endangered, or threatened species, such as the Florida panther. An active acquisition program is in the process of acquiring land north of the Osceola NF in the Pinhook Swamp area.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT'' the Florida panther.

Gray Bat

The loss of roosting caves is the greatest threat to the gray bat (Tuttle, 1979). The national forests in Florida do not have any caves suitable for roosting by gray bats. However, some areas of the forests may be used as foraging habitat. Gray bats forage primarily over water, especially over streams or pools bordered by forests (Tuttle, 1976 and La Val et al., 1977). The national forests could provide foraging habitat if there are roosting caves within a suitable distance of the forests. However, the availability of foraging habitat is not believed to be limiting populations of gray

bats, but few quantitative data exist regarding the species' requirements for foraging habitat (USDI, 1982b).

The areas most likely to be gray bat foraging areas are open water and possibly the immediately adjacent forests. For the most part these areas have DFCs with a minimum level of disturbance and management. The proposed management will not affect the quality of potential gray bat foraging areas.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT" the gray bat.

Florida Manatee

The Ocala NF is the only forest that has suitable habitat for Florida manatee. Silver Glen Springs run is used by Florida manatee and was identified in the 1989 Florida Manatee Recovery Plan as an important winter refuge for manatees. The other spring runs on the Ocala NF—Alexander, Juniper, and Salt Springs runs—are too long and too shallow in some places to permit manatee use of the springs as warm-water refuges.

No effects from forest management practices are anticipated. Forestwide standards WL-13 restricts the construction of boating facilities to areas where their construction and subsequent use will not adversely affect manatees; and WL-14 restricts activities that degrade manatee habitat. These standards should provide protection of manatee use areas on the forest. The major effect on manatees at Silver Glen Springs run is from the very heavy volume of boat use. The highest volume of boat use of the springs run occurs during summer weekends, especially holiday weekends. Florida Game and Fresh Water Fish Commission aerial photos during high-use periods have estimated between 1,000- 2,500 boats in the ½-mile spring run at one time. Winter-time boat use of the spring run is low. This lessens the effect to manatee, as this is the time they are most likely to use the spring as a warm-water refuge. The Forest Plan decision to put the Silver Glen area in a developed recreation DFC will have little impact on the boat use of this area. The Forest Service does not have jurisdiction over the Silver Glen Springs run and cannot restrict the number of boats on the run itself.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT" the Florida manatee.

Florida Black Bear

Because of its large home range size and low population density, the Florida black bear is particularly vulnerable to habitat loss. In addition, a low reproductive rate makes it sensitive to excessive mortality.

National forests provide three of the largest blocks of habitat for black bear in the State of Florida. This is probably the single most important function the forests provide for black bears. Compared to the rest of the State of Florida, the national

forests are relatively undisturbed and remote. Each national forest is also adjacent to other areas of black bear habitat, which makes the effective area of habitat available much larger than the national forests themselves. The Apalachicola NF is adjacent to the St. Mark's National Wildlife Refuge to the southeast, Apalachicola River Water Management Area to the west, Tates Hell State Forest and Tates Hell Water Management Area to the south, and commercial timberlands to the south and north. Of the 2.6 million acres occupied by the Apalachicola bear population, about 800,000 acres are currently under governmental ownership (Apalachicola Bear Management Committee, 1995). Lands suitable for the black bear, adjacent to the Osceola NF, include the Okefenokee National Wildlife Refuge to the north and commercial timberlands almost entirely surrounding the forest. The Ocala NF has water management district lands to the east, Lake Woodruff National Wildlife Refuge to the southeast, and commercial timberlands mainly to the west. The acreage of habitat for black bears is sufficient to support a stable black bear population; the larger concern is the quality of this habitat.

Habitat quality for black bears can be affected by many factors. The greatest impacts to black bears in the national forests in Florida come from land management practices and the fragmentation of habitat by major roads.

The major land management practices in the Forest Plan are prescribed burning and timber management. The timber management proposed in the Forest Plan includes restoration of longleaf pine on sites currently occupied by off-site slash pine, thinning of young pine plantations, initiation of uneven-aged management on longleaf pine and some slash pine sites, sand pine clearcut, and a small amount of irregular shelterwood cutting in slash pine sites. Where timber is managed in a mosaic of harvest chronology and stand age, habitat quality probably can be maintained (Harris, 1984). Black bears and silvicultural practices are generally compatible (FGFWFC, 1993). One of the Forest Plan goals is to maintain or, where necessary, restore ecosystem composition, structure, and function within the natural range of variability. Meeting the Forest Plan goal will ensure silvicultural practices are compatible with maintaining black bears on the forests. Management of the longleaf/slash pine systems will allow more sunlight onto the forest floor and improve foraging conditions for black bears. The proposed sand pine management will potentially benefit Florida black bears by providing areas of young scrub habitat with high acorn production. Acorns are an important fall food source for black bears. Because fall foods are extremely important in determining reproductive success in black bears (Rogers, 1976), land management practices reducing mast production may decrease bear productivity. Hardwood timber types will not be managed for timber production this planning period and also will supply a valuable crop of mast production, both hard and soft mast.

Maehr and Brady (1982, 1984) suggested that large-scale winter burning may reduce the diversity of foods available to bears by causing spread of saw palmetto and reduction in blueberry and runner oak. Prescribed burning will occur throughout the year with an emphasis on growing-season burns. The prescribed fire program meets the guidelines established by the Apalachicola Bear Management Committee (1995). Summer burning should encourage the latter species

especially in concert with the timber management practices proposed. Palmetto berries are an important fall food source for Florida black bears. Palmetto berry collection is permitted on the Osceola and Ocala NFs, but not on the Apalachicola NF. Thirty-three permits have been issued during the last 4 years. These permits are each for one ton of berries. This amounts to an annual average of 16,500 pounds of palmetto berry removal if all permits were used to the maximum level. The concern with the removal of the palmettos berries is that during low production years a significant food source for black bear could be reduced. Palmetto berry harvesters look for areas with very high numbers of berries. Since the vegetation is usually thick, many berries are hidden from view and are left behind (Johnson, 1997). Permits are issued on an annual basis with quantity and location restrictions left to the discretion of the District Rangers. Therefore, the harvest of palmetto berries, if properly controlled, would not have a great impact on the black bear. Salvage and snags standards will provide for a source of deadwood, which provides for insects and their larvae. These standards will provide for the constant supply of large deadwood throughout the forests. Insects are a valuable food source for black bears. These standards will help ensure this food source. The proposed management practices should maintain or improve habitat conditions for black bears.

Denning habitat for Florida black bear will be found in abundance. A wide variety of habitats in Florida are used for denning, including pine flatwoods, shrub swamp (titi), hardwood/titi strands in flatwoods, and hardwood swamps. The forests have these habitat types in great abundance, > 760,000 acres. Ground nests in heavy vegetation are the typical den sites in Florida but can include hollow stumps, hollow trees, and ground cavities. Large areas of remote habitat with little disturbance are provided by DFCs 0.1, 0.2, 1.1, and 4.2. Forestwide standard VG-8 will provide areas for denning habitat by producing old large hardwood trees that will be suitable den sites. Snags will be protected by forestwide standard VG-32 and, if of sufficient size, will provide potential den sites.

Habitat for bears is impacted by the presence of roads, and this impact increases with the traffic level of the road. An avoidance zone may be created along roads with > 100 vehicles per day. A calculation of the area greater than 500 meters (1,640 feet) from all level A roads—(all paved roads and one major forest road FH-13), these are the roads most likely to have > 100 vehicles per day—reveals that the Apalachicola NF has 507,155 acres, or 88.1 percent of its total, outside the avoidance zone. The Osceola NF has 154,667 acres, or 79.4 percent of its total, outside the avoidance zone. The Ocala NF has 330,257 acres, or 86.1 percent of its total, outside the avoidance zone.

Also, there are 84,590 acres of wilderness and wilderness study areas on the national forests in Florida, which will provide roadless areas of solitude and minimal disturbance for black bears. Pinhook Swamp also provides an additional 10,031 acres of remote area for black bears and is the main link between the Osceola NF and the Okefenokee National Wildlife Refuge.

All recorded vehicle-caused mortality of bears on the national forests have occurred on paved roads that cross the forests. The majority of this mortality has occurred on the Ocala NF on SH-40, SH-42, SH-19, and SH-314A. The management practices

in the Forest Plan will not affect the traffic levels on these highways. The traffic level on these roads is a function of the large number of people living in and around the forest and the even greater number of people passing through the forest with destinations other than the forest. Current distribution and number of roads and level of associated roadkills is not problematic for the Apalachicola black bear population (Apalachicola Bear Management Committee, 1995). The same is most likely true of the Osceola black bear population north of Interstate 10. This interstate highway is probably a significant barrier to black bear movement in this population. Fortunately, most of the quality bear habitat is north of I-10, with Pinhook Swamp, Okefenokee National Wildlife Refuge, and the majority of the Osceola NF north of the interstate.

Very little road construction is anticipated in the next planning period as the road system needed for timber management is already in place. Most road activity will be maintenance and reconstruction of existing roads. Reconstruction can be described as heavy maintenance were the road is rebuilt in the existing roadbed. The Forest Plan access policy will improve conditions for black bears in the national forests. The policy will eliminate cross-country travel by motorized vehicles and bicycles; only pedestrians and horses will be permitted cross-country. This will lower the disturbance to black bears. After Forest Plan implementation a system of roads and trails will be designated for travel by the various user groups. Trails may be multiple use and some may be single use. This policy is intended to reduce the proliferation of user created roads and trails and eliminate the maze of roads and trails that now exists in some areas. This ultimately will have a positive effect on black bears.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO CAUSE A TREND TO FEDERAL LISTING OR A LOSS OF VIABILITY" for the Florida black bear.

Florida Scrub-Jay

On the national forests in Florida, scrub-jays occur only on the Ocala NF in early successional scrub habitat. The sand pine scrub ecosystem on the Ocala NF historically was regenerated by catastrophic stand-replacing fires. Many of the species endemic to the scrub, including the scrub-jay, are dependent on the early succession habitat that was created by these large fires. Because of the extensive interface with private land throughout the forest and the intensity of burn, stand-replacing fires are too dangerous to be used for habitat management on a large scale. Between 4,000-5,000 acres needs to be treated each year to maintain scrub-jay habitat at the current level. This is not currently possible to accomplish with prescribed fire because of the difficulty in burning sand pine scrub. Therefore, the best tool currently available to maintain scrub-jay habitat on the Ocala NF is clearcutting of sand pine as part of the forests' timber program. Clearcutting of sand pine scrub appears to mimic, but not duplicate, these stand-replacing fires. Scrub-jays, sand skinks, and several other species associated with early successional scrub habitat have in the past

responded favorably to the habitat created by clearcutting sand pine scrub.

Large cuts may benefit scrub-jays. This allows for interaction between more scrub-jay groups than is possible with smaller opening sizes. The maximum opening size for most of the sand pine scrub, MA 8.2, will be 160 acres. However, 320-acre openings could occur in the Ancient Island scrub, MA 8.1.

The preferred alternative would provide habitat for about 1,125-1,800 scrub-jay territories. This is calculated by assuming 25-40 acres per territory in young sand pine scrub and an 80-percent occupancy rate on 40,000 acres of this habitat. This would provide for 800-1,280 territories. Applying the same assumptions on 16,274 acres of this habitat would provide for 325-520 territories. The total amount of 56,274 acres of habitat would provide for about 1,125-1,800 territories. Fitzpatrick et al. (1991) state, ``Populations containing 30 or more scrub-jay territories probably are the smallest populations in which long-term survival is 90% guaranteed for 100 years or more." There are currently estimated to be about 717 scrub-jay families on the forest. Even if the current number of families or the projected suitable habitat acres were grouped into several smaller populations long-term survival of scrub-jays on Ocala NF is still very possible.

FORPLAN model runs include an output of scrub-jay habitat. This output is based on the number of acres of scrub-jay habitat and a measure of the suitability of that habitat. The FORPLAN model can be run to maximize various outputs. A comparison between the maximum run for scrub-jay habitat output and the maximum present net worth shows an average difference of 0.3 percent per 10-year period over the first 50 years of the model run, see Attachment B. Further explanation of the FORPLAN model can be found in Chapter 3, ``Affected Environment and Environmental Consequences," and Appendix B, ``Analysis Process," of the FEIS.

Fitzpatrick et al. (1991) suggest that isolated scrub habitat preserves within about 5 miles of one another are sufficiently close to allow for some occasional movement of Florida scrub-jays among them. Few if any scrub-jay families are more than 5 miles from other groups of scrub-jay families on the forest. The districts are divided into smaller management units called compartments, these areas are based on natural and human-made features and vary in size from several hundred acres to thousands of acres. These areas are examined every 5 years on average to determine what management actions are needed. With this frequency of examination nearly all scrub areas will have some sand pine harvest that provides the early successional scrub habitat for

scrub-jays. Standards 8.1-3 and 8.2-3 prioritize cutting of mature sand pine in areas adjacent to occupied scrub-jay habitat. This will provide for suitable scrub-jay habitat adjacent to occupied areas, as the occupied habitat will age and become unsuitable.

Three areas will be permanently maintained in early successional scrub habitat for the purpose of scrub-jay management. These areas will provide scrub-jay habitat on a continuous basis and provide core population centers for scrub-jays. They will be kept in early scrub oak habitat by first harvesting the sand pine, where permitted by MA standards, when it reaches a commercial value and then perpetuating the early successional scrub by the use of prescribed burning. These areas include the area designated as the scrub-jay management area - MA 8.4 (1,874 acres), the Pinecastle Bombing Range - MA 9.1 (5,500 acres), and portions of Juniper Prairie Wilderness - MA 0.2 (8,900 acres).

Prescribed burning, wildfires, and fires that result from bombing runs on the bombing range, MA 9.1, in areas containing scrub-jay habitat may result in the loss of nests or nestlings but will provide a net positive for the scrub-jay by maintaining suitable long-term habitat. Standards 8.1-4, 8.2-6, and 8.4-4 are intended to minimize the risk of losing nests or nestlings during site-preparation burns.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT'' the Florida scrub-jay. Scrub-jay nestlings could be killed and nests lost through the use of prescribe fire in suitable scrub-jay habitat. The number of individuals affected cannot be determined but should be insignificant as these would be infrequent and chance encounters. Prescribed burning will improve habitat on the national forests for Florida scrub-jays and result in positive long-term effects.

Bald Eagle

Bald eagles have been observed on three national forests in Florida. Three forests have habitat that is suitable for nesting and foraging. The Ocala NF has 46 known nest sites. The Apalachicola NF has one known nest site. The Osceola NF has no known nesting sites at this time.

The Forest Service protects bald eagle nesting, feeding, and roosting sites by adhering to the standards established in *Habitat Management Guidelines for the Bald Eagle in the Southeast Region*, USFWS. Forestwide standards WL-4 and WL-5 establish the primary and secondary zones around nest locations. Activities within these zones are limited to minimize disturbance to nesting bald eagles.

The timber management practices in the Forest Plan will potentially improve nesting habitat for bald eagles on the forests, primarily by allowing trees to grow older through either longer rotations or by classify certain timber types as unsuitable for timber production. This will result in improved nesting habitat because of a greater number of older and larger trees on the forests. Hardwood and cypress will not be managed for timber production, standard VG-8. Therefore no nesting habitat will be impacted in these forest types, and these species will be allowed to grow to a large size. The majority of the pine forests will be managed for timber production. The mature longleaf and slash pine forests under timber management always will have some overstory intact. The predominate management in longleaf pine will be uneven-aged management, which will result in a continuous overstory, except for small regeneration areas two acres or less in size. The largest trees will provide suitable nesting habitat for bald eagles. Mature on-site slash pine will be managed with either the modified group selection or irregular shelterwood system. Either method will leave an overstory that contains large trees which will be suitable for nesting sites. Bald eagles have been observed nesting in sand pine. Sand pine harvest in areas containing bald eagle nest sites will meet the *Habitat Management Guidelines for the Bald Eagle in the Southeast Region,* USFWS. All harvest areas in any timber type are field examined and a biological evaluation is prepared before any harvest activities are allowed.

Perhaps the greatest threat to bald eagles on the forests is disturbance of nesting sites. This disturbance can occur in many forms, some of which include: general vehicle traffic on established roads, timber harvest activities, road maintenance activities, recreational travel by off-road vehicles, and even watercraft and aircraft disturbance. Delineation and enforcement of the management zones identified in the *Habitat Management Guidelines for the Bald Eagle in the Southeast Region* and forestwide standards WL-4 and WL-5 will help prevent disturbance to nesting bald eagles.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT" the bald eagle.

Wood Stork

Wood storks have been observed on three of the national forests in Florida. They have been observed feeding in temporary ponds and roadside ditches; and flying over the Apalachicola NF. The Osceola NF has one confirmed wood stork nesting site, 100-150 birds; wood storks also forage on the Osceola NF. They also have been observed foraging on the Ocala NF.

The Forest Service protects wood stork nesting, feeding, and roosting sites by adhering to the standards established in *Habitat Management Guidelines for the Wood Stork in the Southeast Region*, USFWS. Forestwide standards WL-6 and WL-7 establish the primary and secondary zones around nest locations. Forestwide standard WL-8 establishes a zone around roost sites. Activities within these zones are limited to minimize disturbance to nesting and roosting wood storks.

Standards VG-4 and VG-8 protect unique vegetative sites and exclude hardwood and cypress stands from timber production. These standards along with the expanded silviculture Best Management Practices (BMPs) (all seasonal lakes and ponds and all sinkholes open to the Floridan aquifer are included in the primary zone, 35 feet) will protect virtually all potential nesting, roosting, and feeding sites on the forests. The forestwide objective to increase prescribed burning, especially with the emphasis on growing-season burning, may restore feeding areas in ephemeral ponds that have been encroached on by invasive woody vegetation.

Perhaps the greatest threat to wood storks on the forests is disturbance of nesting, roosting, and feeding sites. This disturbance can occur in many forms, some of which include: general vehicle traffic on established roads, timber harvest activities, road maintenance activities, recreational travel by off-road vehicles, and even watercraft and aircraft disturbance. Delineation and enforcement of the protection zones identified in the *Habitat Management Guidelines for the Wood Stork in the Southeast Region* and forestwide standards WL-6, WL-7, and WL-8 will prevent disturbance to wood storks.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT'' the wood stork.

Red-cockaded Woodpecker

The national forests are home to five populations of RCWs. The Apalachicola RD is home to the largest population of RCWs throughout the species range. There are more than 500 active clusters in this population. The Apalachicola population has been stable to slightly increasing during the past 10 years. The Wakulla RD has a population of about 150 active clusters. This population has been in decline over the past 10 years. The Apalachicola and Wakulla populations do have some exchange of individuals. In one recent move a male RCW moved from an Apalachicola cluster (70-2) to a Wakulla cluster (350-2). This is a move of more than 35 straight-line miles and across the Ochlockonee River. The St. Mark's Wildlife Refuge and Ochlockonee State Park are south and southeast of the Wakulla RD. There are currently a combined 7 active clusters in these areas. There have been documented exchanges of individuals between the forest and refuge.

The Osceola NF is home to about 50 active clusters, and the population has shown an increase during the last 10 years. There is a population of RCWs to the north of the Osceola NF on the Okefenokee National Wildlife Refuge. There has been one documented exchange between the Osceola NF and the Okefenokee National Wildlife Refuge. The Ocala NF has two populations of RCWs, each under 10 active clusters. They are separated by more than 25 miles of unsuitable sand pine scrub habitat. The nearest other RCW groups are on private land more than 35 miles away across mostly agricultural, urban, and unsuitable forested lands.

The national forests in Florida will follow the management direction in the *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* (RCW EIS) with the following exceptions: reduced foraging habitat on the Apalachicola HMA, reduced residual basal area (BA) in stands not considered uneven-aged, and a deviation from the 0-10 year age class for the experimental trials of irregular shelterwood in slash pine. These exceptions are discussed in detail below.

Long- and short-term RCW population goals were established for each RCW hab-itat management area (HMA) (Table F.2). Long-term population objectives were based on current and potential suitable habitat, forest type, and habitat interspersion within each HMA. Short-term goals were based on Forest Service biologists estimates of population growth over the planning period (10-15 years), taking into account factors such as current arrangement and breeding status of clusters, current habitat conditions, and management practices known to provide benefits to RCWs (midstory control, prescribed burning, artificial cavities, and augmentation).

Table F.2

Red-cockaded Woodpecker Habitat Management Area Objectives

RCW HMA	1998 Active Clusters	Long-Term Goal	Short-Term Goal, 10 Year
Apalachicola	500±5	500	500
Wakulla	150±5	506	250
Osceola	54	457	151
Island	7	67	32
Paisley	3	81	12

The Apalachicola and Osceola HMAs are designated RCW recovery populations. The 1985 *Recovery Plan for the Red-cockaded Woodpecker* requires that a population size of at least 250 breeding groups be achieved for a population to be considered recovered. The *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* calculated that 500 active clusters would be needed to achieve 250 groups that nest successfully annually. The long-term goal for the Osceola HMA is lower than the 500 needed for recovery be-

cause of the land base available and the arrangement of suitable and unsuitable habitat within the forest. Current data indicate that 75 percent of active RCW groups nest successfully annually in the Apalachicola HMA and 71 percent of active RCW groups nest successfully annually in the Osceola HMA. If this percentage is representative of stable RCW populations in north Florida, there will be at least 320 groups nesting successfully annually in the Osceola HMA when this population is fully recovered using the 457 active cluster figure.

Nesting and Roosting Habitat

Trees selected by RCWs for cavity construction have certain characteristics (Hooper, 1988). These trees typically need a minimum of 5 inches of heartwood, but preferably 7-8 inches, at cavity height (Conner and Rudolph, 1995). Trees with an overly large amount of sapwood may be more difficult for excavation of cavities and/or may not be suitable for cavity construction. RCWs also prefer to excavate their cavities in trees that are infected with red heart fungus (*Phellinus pini*). These characteristics generally require trees older than 80 years of age.

There are several forestwide standards that will help to ensure a continual supply of potential cavity trees in the future. Forestwide standard VG-10 sets the parameters for uneven-aged management that will provide for a continuing supply of large trees that may be used as RCW cavity trees. Forestwide standard VG-11 requires retention, if available, of at least six pine trees per acre larger than 18 inches diameter at breast height (DBH) for group selection and irregular shelterwood harvest areas. Also, forestwide standard VG-12 requires retention of all relict and flattop longleaf and slash pines and some that are misshapen, poorly formed, or suppressed.

The major proposed silviculture system for regeneration of longleaf/slash pine is a modified group selection. This system will provide potential cavity trees on nearly every acre as it requires large trees throughout the managed area. As these larger trees are lost through mortality, there will be a continual on-site replacement as trees in the next smaller size class grow into the larger size classes. The young regeneration from this system will provide for cavity trees in the long term. Some of these trees may be especially suited for use as cavity trees because older trees grown under stressful conditions generally will have a greater percentage of heartwood than trees grown in more favorable conditions (Wahlenburg, 1946; Hepting, 1971). Pine midstory is a concern with group selection system. In longleaf pine the majority of the pine regeneration is expected to be in openings created during harvest and not throughout the entire stand because of the intolerant nature of longleaf pine. In regeneration openings a rapid break up of the regeneration into different size classes should occur as fast-growing seedlings express dominance early. Pine midstory may pose more of a problem in slash pine areas treated with modified group selection. Slash pines are more tolerant of shade and may occur throughout the treated stands. Prescribed burning after the regeneration is established should have a thinning effect on the less dominant stems.

There also will be a small amount of irregular seed tree/shelterwood regeneration within the RCW HMAs, a total of 1,878 acres, on the Apalachicola and Wakulla RDs and Osceola NF. Irregular seed tree/ shelterwood is a permitted silvicultural system in the RCW

EIS. This action is proposed on an experimental basis to evaluate the effectiveness of this silvicultural system. After harvest and overstory removal, this system will leave a supply of large trees throughout the treated areas, from 40 basal area to 6 trees per acre average, depending on forest type and management intensity level (MIL) status of the HMA where the harvest is taking place. All other trees will be removed from the harvest area. As the leave trees die their replacements within the harvest area will take many decades because there will only be the young regenerating pines to serve as replacements.

To implement the test of irregular seed tree/shelterwood method it will be necessary to exceed the 0-10 age class distribution guide in the RCW EIS during the early years of Forest Plan implementation. However, the 0-10 year age class will be at or below the allowable percentage by the end of the first decade after Forest Plan implementation. In following decades the age class standards in the RCW EIS will apply.

Example: The No Name HMA contains 50,000 acres of slash pine. A maximum of 10 percent in 0-10 age class allows 5,000 acres in 0-10 age class, assuming an even harvest level of 500 acres per year. Age class distribution in this example is not representative of any particular RCW HMA (Table F.3).

Table F.3

Age Class Distribution for No Name Habitat Management Area

Age	Acres									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1	500	500	500	500	500	500	500	500	500	500
2	125	500	500	500	500	500	500	500	500	500
3	360	125	500	500	500	500	500	500	500	500
4	895	360	125	500	500	500	500	500	500	500
5	245	895	360	125	500	500	500	500	500	500
6	658	245	895	360	125	500	500	500	500	500
7	856	658	245	895	360	125	500	500	500	500
8	754	856	658	245	895	360	125	500	500	500
9	985	754	856	658	245	895	360	125	500	500
10	698	985	754	856	658	245	895	360	125	500
Total	**6,076**	**5,878**	**5,393**	**5,139**	**4,783**	**4,625**	**4,880**	**4,485**	**4,625**	**5,000**
% 0-10	12.15	11.6	10.79	10.28	9.57	9.25	9.76	8.97	9.25	10.00

In the previous example the 0-10 age class distribution percentage is exceeded in the first 4 years of implementation. The next 5 years are below the 0-10 age class distribution percentage. At the end of the first decade with an even distribution of regeneration the 0-10 age class distribution percentage is within limits. This is a hypothetical example but demonstrates why the 0-10 age class distribution percentage will be exceeded in the first part of the planning period.

Restoration of sites currently occupied by off-site species to longleaf pine will occur on between 18,000 to 23,000 acres during the next planning period. Ten thousand to 15,000 acres of this restoration will be by clearcutting the off-site species and planting longleaf pine. This will not have

an immediate affect on nesting or roosting habitat as there are no potential cavity trees on these sites. This action will however improve the future potential of these areas for clusters. In the current state these areas would never produce trees with the characteristics needed for cavity trees. Restoration of longleaf pine to these sites will in the long-term provide potential cavity trees. It will take many decades, > 80 years, before the restored sites become suitable for cavity trees; however, they will be suitable for foraging areas within about 30 years. Eight thousand acres of this restoration will be the removal of off-site species in mixed stands. The off-site species that generally will be removed is slash pine. All longleaf pines will be retained during restoration activities. Direct effects of this action include the reduction of BA in the treated stands. There is the possibility that some trees removed may have been potential cavity trees. However, this risk is small since RCWs prefer older longleaf pines as cavity trees and the trees being removed will be slash pines in the range of 31-80 years of age. In the long term this action will provide more open stands with a higher percentage of longleaf pines. These open stands will improve the growth of the residual trees and increase the suitability of these stands for uneven-aged management. This will benefit RCW as longleaf pines are the preferred species of tree for cavity construction and are longer lived than slash pines.

The Forest Plan has several goals and objectives that emphasize the use of prescribed fire. Prescribed fire generally will improve nesting habitat by reducing midstory and encouraging herbaceous ground cover. Prescribed fire also has the potential to affect nesting by burning RCW cavity trees. This may result in the death of nestlings if the fire occurs while the cavity tree is occupied by nestlings. This can also cause enlargement of the entrance hole, burning away of the resin, and/or death of the tree. Enlargement of the cavity entrance hole allows competitors, like red-bellied woodpeckers, easier access. This can reduce RCW productivity. If trees are killed, replacement may never occur or may take several months to years. This can put individual RCWs at risk if they are forced to roost outside. It also can reduce the productivity of the group. Forestwide standard FI-5 provides protection measures such as cutting, raking, wetting down, and backfiring of fuels adjacent to active cavity trees during prescribed burning operations to minimize the risk to active cavity trees. Approximately 9-15 cavity trees per year are rendered unusable as a result of prescribed fire or wildfire, 3-5 trees from each the Apalachicola, Osceola, and Wakulla HMAs.

Nesting and roosting habitat also can be improved by the addition of artificial cavities to existing clusters or in recruitment stands and the use of restrictor plates. Two forms of artificial cavities will be used, inserts and drilled cavities. The choice of which type of artificial cavity to use will depend on site-specific conditions. Restrictor plates are used to prevent the enlargement of cavity entrances by cavity competitors. The priority of locations for artificial cavities and restrictor plates will follow the guidelines in the RCW EIS.

Midstory

Midstory problems on the forests have been minimized by the extensive use of prescribed fire. Prescribed fire is by far the preferred method of midstory control, because of the wide range of beneficial ecological effects and its relatively low

cost. However there are areas where fire, for one reason or another, has not been utilized or used infrequently and midstory may be of concern. In these areas, there are several alternative methods to control midstory in RCW habitat. These include chemical treatment or mechanical removal either through sale, contract, or firewood collection.

Foraging Habitat

The current foraging guidelines specified in the Regional RCW guidelines and the Blue Book, issued by the U.S. Fish and Wildlife Service in 1989, will be followed for all active clusters in all HMAs, except the Apalachicola HMA. The exception for the Apalachicola HMA will be discussed below. Recruitment stands in the Wakulla HMA will be provided the same level of foraging habitat as active clusters. Recruitment stands less than 1.5 miles from active clusters in the Osceola, Island, and Paisley HMAs will be provided the same level of foraging habitat as active clusters. Recruitment stands greater than 1.5 miles from active clusters in the Osceola, Island, and Paisley HMAs may have foraging habitat reduced to half the Blue Book level for the purpose of habitat restoration. Habitat restoration may include clearcutting off-site pine species or the removal of off-site species in mixed stands. The off-site species that generally will be removed is slash pine. All longleaf pines will be retained during restoration activities. There will be no direct effects to RCWs from this action. The treated areas provide foraging habitat to recruitment stands. Recruitment stands by definition are unoccupied by RCWs, otherwise they would be classified as active clusters. In the long term, this action will provide a greater number of longleaf pines. This will benefit RCWs as longleaf pine is the preferred species of tree for cavity construction and lives longer than slash pine.

Several management activities can be expected to improve RCW-foraging habitat. These activities are prescribed burning and thinning dense pine stands. Thinning will promote the growth of residual pine stems and provide for a more open condition, which RCWs prefer. Many of the stands that will be thinned in the next planning period will not be considered RCW-foraging habitat, as they will be less than 30 years and not meet the definition of foraging habitat under the Blue Book guidelines. However, these thinnings will improve the future foraging potential of these stands for RCWs. Other thinnings will occur in pine stands which are considered foraging habitat. These stands can be either older plantations or dense second growth stands. *National Forests in Florida* proposes a standard that states: stands within foraging habitat (RCW) that average greater than or equal to 10 DBH and are not considered uneven-aged should be maintained with a pine BA of 60-110 square feet. This is 10 square feet below the 70 BA, the RCW EIS guidelines set for maintaining pine stands. Pine stands on the national forests in Florida are naturally sparse and generally are considered dense if above 80 or 90 BA. The majority of the stands that would fall under this guideline would be pine plantations that are of foraging age and size and have not been previously thinned. A small number of these stands will be second-growth stands of longleaf or slash pine. Observations by field personnel indicate that RCWs tend to avoid these denser stands.

Pine regeneration harvests, including modified group selection and irregular shelterwood, also have the potential to

affect foraging habitat. All harvests will be evaluated at the site-specific level to ensure that potentially affected RCW clusters—active, inactive, and recruitment—will be provided the required foraging habitat after the harvest is complete. The majority of pine regeneration harvests in the next planning period will be modified group selection harvests. This type of harvest will not have a fragmenting effect on foraging habitat as harvests will never create openings of greater than 2 acres. Openings of this size should not cause any fragmenting effects since RCWs will be able to traverse these size openings.

Prescribed fire can improve foraging habitat by reducing midstory and encouraging the herbaceous ground cover. A positive response in measured RCW variables has shown a relation to a ground cover dominated by wiregrass (James et al., 1997).

Reduced Foraging Habitat on the Apalachicola RD

In the Apalachicola RCW HMA, the Forest Service proposes to reduce the required foraging habitat for RCWs. The Forest Service will provide at least 4,100 pine stems > 10-inch DBH and at least 30 years old and a minimum of 5,500 sq. ft. of pine basal area > 5-inch DBH for foraging habitat.

The RCW population on the Apalachicola RD is the largest in the world. The population is comprised of about 500 active clusters. There are three sources of information that indicate the population is either stable or increasing. The most scientifical-ly designed survey done to date is a survey of randomly selected compartments that was repeated 10 years apart. This survey indicates that the RCW population on the Apalachicola RD has increased by about 10 percent (Costa, 1995). A second source of information is a survey of all known clusters of cavity trees completed in 1993. This survey found 494 active, 106 inactive, and 4 abandoned clusters. The survey of known clusters was not designed to detect new clusters. Therefore the survey was biased toward underestimating the true population size. Further, field observations taken during banding and fledging checks, in 158 clusters, indicate that most of the time when adult birds that disappear, because of mortality or emigration, they are replaced almost immediately. Replacement may be somewhat slower in clusters on the edges of the forest.

Several sources of information suggest that a reduction in the current foraging standards for RCWs will not adversely affect the RCWs on the Apalachicola RD.

On the Apalachicola NF, Beyer et al. (1996) examined habitat quality and reproduction of RCW groups. On the Apalachicola RD, these clusters had a wide range of available forage (1,200-13,176 stems > 10 inches DBH and 1,758-16,522 BA). They did not detect an association between the number of young fledged and the availability of pine trees or the degree of habitat fragmentation. They could not discount the possibility that the quantity of foraging habitat might occasionally limit reproduction because they only had 4 years of reproductive data.

Again, on the Apalachicola NF, James, et al. (1997) found that the variation in the bird variables (mean number of adult birds in the social group, number of active units within 1.6 kilometers, mean number of eggs laid in the first nesting attempt, and

mean number of young fledged) was not significantly related to the sizes or densities of pine trees in these territories. However, there was a highly significant positive association between the number of adult birds living in clusters and the amount of wiregrass ground cover and the amount of natural pine regeneration. They also found that gallberry was negatively associated with the number of adults in residence. While these associations were strong and clearly related to the fire-dominated ecosystem, they do not explain the mechanisms at work.

Preliminary results from a study involving the first uneven-aged management cut on the Apalachicola RD have not detected a change in the productivity or the year-round home range when compared to the control group (Engstrom, 1997). This study is taking place on the site of the 1995-96 Wilma timber sale. This sale reduced the foraging habitat from 5,844 to 5,170 average pine BA per group and average number of pine stems ≥ 10 inches from 5,190 to 4,255. This is very close to the proposed foraging standards, 92.7 percent of the proposed BA and 103.7 percent of the proposed pine stems ≥ 10 inches.

In 1980-81 Hovis studied RCWs on a 12,797-acre area in the Apalachicola RD. An intense survey of the site found it to contain 40 active and 2 inactive clusters sites. The same area was later the site of an investigation by Porter and Labisky (1986). They found that the foraging habitat available to RCWs on the study site was younger and less well-stocked than those in which management prescriptions in the recovery plan and Forest Service guidelines were derived. Four clusters, all active, from this study area were included in the Beyer et al. (1996) study. These clusters have a median number of > 10 inches DBH stems of 4,326 and a median sq. ft. BA of 4,735, also well below the recovery plan and current Forest Service-foraging guidelines. A recent check of the same area using geographic information system data reveals that there are currently 44 active and 4 inactive clusters. This area has shown an apparent increase in the number of total and active clusters over the last 17 years while most likely being well below current Forest Service-foraging guidelines for the past 17 years.

Hooper and Lennartz (1995) found on the Francis Marion NF in South Carolina that removal of 43 percent of the foraging habitat from a dense aggregation of RCW had no discernible negative impact on the study groups. The number of groups actually increased during the study period. Each group averaged 5,800 pines greater than or equal to 10 inches before the study (below the current standard), and 2,500 pines that size after removal (below the proposed standard), with no discernible negative impacts. Additionally, foraging habitat on the Francis Marion NF was being removed at a rate of 1.5 percent (areal basis) each year between 1979-89 and there was a net increase in RCW groups of 1.4 percent per annum.

Wood et al. (1985) applied a range of cuts removing up to 37 percent of the annual territory of RCWs on Hobcaw Barony east of Georgetown, South Carolina. Wood et al. did not detect any influence of level of cutting on magnitude of size change in territory area, potential foraging area, or high-use area within territories. They also did not see any effect on the numbers of nestling surviving to the immediate pre-fledging period.

The above examples indicate that a reduction in forage habitat from the

current standards most likely will not adversely affect the RCWs on the Apalachicola RD. However, no study currently puts a definitive number on the required foraging habitat for RCWs on the Apalachicola RD. The foraging standards proposed for the subpopulation on the Apalachicola RD are based on the median numbers of pine stems > 10-inch DBH and amount of pine BA available at 41 active clusters studied by Beyer et al. on the Apalachicola RD. This study most closely measured RCW-foraging habitat in the manner that the Forest Service uses to calculate foraging habitat during project evaluations. Also, current handbook guidelines were based on the average forage in RCW groups on the Francis Marion NF. Therefore, the median number of stems and basal area was selected from the Beyer et al. study. This number provides a reduction in the foraging standard while still maintaining habitat conditions at or above what was known to exist on half of the clusters in the Beyer et al. study. Although the above references indicate these foraging standards should be sufficient to maintain this subpopulation, it will continue to be necessary to monitor this subpopulation. The Forest Service will monitor the RCW clusters potentially affected by timber harvests requiring the reduced foraging guidelines. A description of this monitoring can be found in the monitoring section of the Forest Plan. The Forest Service will cease timber harvesting under the new standards and initiate Section 7 consultation with the U.S. Fish and Wildlife Service, if monitoring indicates a difference in RCW variables when comparing RCW groups associated with timber harvest utilizing the reduced foraging guidelines and RCW groups that are unaffected by the new harvest standards. See Attachment A.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT" the RCW. RCW nestlings could be killed and nests lost through the use of prescribe fire during nesting season. Cavity trees also may be rendered unsuitable for RCW use if damaged by fire. The number of individuals affected cannot be determined but should be insignificant as these would be infrequent and chance encounters. Protection measures used during prescribed burning will reduce the possibility of nestling and/or cavity tree damage. Prescribed burning will improve habitat on the national forests for RCWs and result in positive long-term effects.

American Alligator

The American alligator is federally designated as threatened due to similarity of appearance to the American crocodile. All the national forests in Florida are outside the range of the American crocodile. The Ocala NF is the closest but still more than 150 miles from the range of the American crocodile.

The State of Florida currently permits a limited harvest of American alligators and lists them as a species of special concern.

American alligators will benefit from the management proposed. The focus on wetland habitats is maintenance and restoration. Most river corridors have been designated as moderate recreational development, special interest areas or hardwood/ cypress no timber production areas. Additionally the silviculture BMPs have been strengthened.

Implementation of the *Revised Land and Resource Management Plan for National*

Forests in Florida is ``NOT LIKELY TO ADVERSELY AFFECT" the American alligator.

Eastern Indigo Snake

The Forest Service data base of Florida Natural Areas Inventory occurrence records indicate that eastern indigo snakes have been located on all the national forests in Florida. While many of the occurrence records are old, most occurring in the 1960s and 1970s with the most recent 1981, habitat conditions still exists to support eastern indigo snakes.

The largest threat to the eastern indigo snake is habitat loss or degradation (Moler, 1992). The goals, objectives, standards, and guidelines in the Forest Plan will maintain or improve habitat conditions on the national forests for the eastern indigo snake. Management practices such as prescribed fire, timber harvests, restrictions on site preparation, and the proposed access policy will be used to meet these goals and objectives.

Maintaining and restoring ground cover is essential for the indigo snake. Forestwide objective 4, prescribed burn objective, will help create habitat conditions favorable to indigo snake by maintaining and improving ground cover conditions. The emphasis on growing-season burning also will improve habitat conditions for gopher tortoises, a species that provides crucial habitat for indigo snakes in the form of burrow refugia (Moler, 1992). Standard VG-18 seeks to minimize mortality of wiregrass during site preparation. This standard also will benefit indigo snakes by helping to maintain native ground cover conditions.

The timber harvest methods selected in the Forest Plan will create some form of opening in the forests. These will range from single tree openings in thinnings and modified group selections to 320 acre openings in some areas of the sand pine scrub. These openings will allow areas with increased sunlight to the forest floor. Along with the prescribed burning program this will create vegetation conditions favorable for gopher tortoises. This in turn will promote eastern indigo snakes by providing denning and resting sites in the form of the burrows created by gopher tortoises. Forestwide objective 9, maintain 45,000 to 55,000 acres of scrub-jay habitat, will provide favorable habitat conditions for indigo snakes by providing early successional scrub habitat which encourages gopher tortoises. Forestwide objective 5 states create conditions on 45,000 to 55,000 acres of longleaf and slash pine stands which release overcrowded live crowns, favor appropriate pine species regeneration, increase stand growth, allow more sunlight onto the forest floor, and increase suitable habitat for RCWs. This objective also will improve habitat for eastern indigo snakes by improving the ground cover vegetation.

Standards WL-11 and WL-12 are intended to protect gopher tortoises and other burrow inhabitants from collapse of the burrow during use of heavy equipment. While gopher tortoises may be able to dig themselves out after burrow collapse, this is not likely for other burrow inhabitants, such as indigo snakes.

Standard VG-36 allows lightered stump extraction only where stumps occur within a proposed road, facility, or other planned construction or where their removal is part

of an administrative study. This standard will protect lightered stumps, which provide habitat for indigo snakes, but also allow for an administrative study of the effects from lightered stump extraction. This study could provide valuable information on the function of these stumps in southern pine ecosystems.

Because the indigo snake is large, conspicuous, and relatively slow, it is an easy mark for persons who kill snakes on sight. Moreover, the docile nature and handsome appearance of the nonpoisonous snake give it a high value in the pet trade (USDI, 1982a). Standard WL-10 protects eastern indigo snakes and gopher tortoises from direct harm during activities that may endanger individual specimens. The restriction of cross-country travel by motorized vehicles should therefore benefit eastern indigo snakes in several ways. It should reduce the number of chance human and snake encounters that could lead to killing or illegal collection of indigo snakes and reduce inadvertent mortality due to off-road vehicles.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT" the eastern indigo snake. Individual eastern indigo snakes could be killed by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. The number of individuals affected cannot be determined but should be insignificant as these would be chance encounters. Habitat conditions for eastern indigo snake will be maintained or improved on the national forests from the implementation of the Forest Plan.

Sand Skink

Habitat modification and destruction were cited as the primary considerations for listing of the sand skink. Loss of sand skink habitat on the Ocala NF is primarily from the natural succession of the plant communities. Campbell and Christman (1982) characterize sand skinks as colonizers of a patchy, early successional, or disturbed habitat which occurs throughout the sandhill, sand pine scrub, and xeric hammock vegetative associations as a result of biological or catastrophic factors. Since fires are now generally contained to small acreages in the sand pine scrub, timber harvest may provide the next best alternative for maintenance of sand skink habitat.

The sand skink on the Ocala NF may be subject to direct effects from several sources of Forest Plan implementation. These include heavy equipment use, site-preparation activities following timber harvest, and prescribed burning. These activities involve the use of heavy equipment in areas of suitable sand skink habitat. There is the possibility that individuals may be harmed or killed, especially if ground-penetrating equipment is used. In areas of longleaf pine, forestwide standard VG-18, which limits soil disturbance to 10 percent of the treated area, will provide protection for sand skinks. In sand pine regeneration areas, the two most common site-preparation practices are to burn or chop and burn. The objective of the chop is to crush the vegetation to facilitate the burning. Generally, a light single chop is all that is required. These activities most likely represent a small threat since the areas receiving these treatments either are, or recently were, mature sand pine stands and are not optimal habitat for sand skinks. Therefore, the possibility is fairly low that individuals will be directly affected from these activities. The fossorial nature of sand skinks will protect them from being killed or injured during prescribed burning.

The most serious threat to sand skinks on the Ocala NF is habitat degradation as natural succession proceeds in the scrub and sandhill communities. As these areas grow and mature the vegetative structure, especially the root mass, in these areas will become less suitable for sand skinks. Mushinsky and McCoy (1991) found a negative correlation between the relative abundance of scrub-associated oaks and the abundance of sand skinks in scrub patches. Several management practices on the forest will help ensure that areas of suitable habitat remain, including prescribed burning and timber harvest.

The sand skink recovery plan narrative outline, 3.1.2, identified maintenance of the ecotonal areas between longleaf pine-turkey oak and sand pine scrub through controlled burns every 5 to 7 years. Forestwide standard WL-9 states, ``Maintain ecotonal areas between longleaf pine-turkey oak and sand pine scrub by prescribed burning every 2-7 years."

Campbell and Christman (1982) found that the sand skink populations in Ocala NF were most abundant in early successional stages of sand pine scrub. Clearcutting and even-aged stand management of sand pines in Ocala NF appear to have maintained the conditions equivalent to the natural fire regime (1 to 8 years). Although sand skinks benefit from the opening and clearing of sand pine communities, it may be important to leave widely scattered surface litter when

clearcutting. Forestwide standard VG-14 requires that limbs and tops be left where the trees are felled or distributed across the site if a limbing gate or similar device is used. The sand skink recovery plan cites a personal communication from J. Layne that artificial clearings may have potential as a sand skink management tool. If this is indeed correct, many areas—permanent firelines, road shoulders, helispots, etc.—in scrub habitat may contribute to sand skink habitat.

Permanent loss of habitat through roads and other facilities is expected to be extremely small, if any, during the next planning period.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT'' the sand skink. Individual sand skinks could be killed by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. The number of individuals affected cannot be determined but should be insignificant as these would be chance encounters. Habitat conditions for sand skinks will be maintained or improved on the national forests from the implementation of the Forest Plan.

Flatwoods Salamander

The U.S. Fish and Wildlife Service has identified the loss of habitat both longleaf/ slash pine flatwoods terrestrial habitat and its isolated, seasonally ponded breeding habitat as the major threat to the flatwoods salamander. Activities resulting from implementation of the Forest Plan that have the potential to impact flatwoods salamanders are timber harvest, site preparation, prescribed fire activities, road reconstruction and maintenance activities, and access management.

Timber harvest can affect flatwoods salamanders directly by causing mortality when individual salamanders are crushed by heavy equipment. Timber harvest can cause indirect effects by changing the structure of the habitat in harvested areas. All proposed methods of harvest will leave some overstory intact, except restoration by clearcutting. Studies have indicated that clearcutting has negative short-term impacts on local amphibian populations, especially salamanders (deMaynadier and Hunter, 1995). However the long-term benefits of this restoration should offset the negative short-term effects by returning the site to a more natural vegetation structure. Hardwood and cypress timber are not to be managed for timber production, forestwide standard VG-8. This will help to protect the integrity of flatwoods salamander breeding ponds.

Site preparation has the potential for direct effects by causing mortality when individual salamanders are crushed by heavy equipment. Site preparation also can change the vegetative structure and alter the hydrology of the treated areas. Forestwide standards WL-16 and WL-17 prohibit mechanical site preparation within 1,500 feet of known flatwoods salamander breeding ponds. These standards also eliminate the use of herbicides, except for: (1) foliar application can be used to control noxious weeds, and (2) injection, frill, girdle, or cut stump herbicides may be used for treating undesirable trees. These two exceptions will allow for the protection and improvement of flatwoods salamander habitat. BMP primary zones

have been expanded to cover all seasonal lakes and ponds. This will provide protection for flatwoods salamander breeding ponds from the effects of site-preparation activities.

Prescribed fire is recognized as essential to the maintenance of longleaf pine habitats, especially growing-season fire. Fire is needed to maintain both the terrestrial and breeding habitat of flatwoods salamanders. Many Forest Plan goals and objectives relate to prescribed fire. Forestwide standard WL-18, use prescribed fires to restore or maintain salamander breeding habitat, is specifically for flatwoods salamanders. The effects of the prescribed fire proposed in the Forest Plan will have positive effects for the flatwoods salamander.

Road reconstruction and maintenance activities may affect flatwoods salamanders by changing the hydrology of the breeding ponds, connecting these isolated wetlands to permanent wetlands, which would allow the introduction of predatory fish, increase sedimentation, and allow off-road vehicles access to these areas. Forestwide standard WL-19 protects against changes in hydroperiod. This also will prevent the introduction of predatory fish, because to connect a breeding pond to a permanent water source, the source of the predatory fish, will change its hydroperiod. All road reconstruction and maintenance activities must follow Forest Service guidelines and BMPs which will provide protection against sedimentation.

The proposed access policy allows cross-country travel only by foot or horse. This will eliminate effects to terrestrial and breeding habitat from off-road vehicles. Off-road vehicle use can impact breeding habitat if vehicles are permitted to access these areas. These effects include disturbance of the vegetation, disturbance of the soil, and increasing the turbidity of the water in these areas. The implementation of the access policy will prevent these effects.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``NOT LIKELY TO JEOPARDIZE THE CONTINUED EXISTENCE, OR RESULT IN DESTRUCTION OR ADVERSE MODIFICATION OF PROPOSED CRITICAL HABITAT" for the flatwoods salamander. Individual flatwoods salamanders could be killed by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. The number of individuals affected cannot be determined but should be insignificant as these would be chance encounters. Habitat conditions for flatwoods salamanders will be maintained or improved on the forests from the implementation of the Forest Plan.

Gulf Sturgeon

The *Gulf Sturgeon Recovery/Management Plan* identifies overexploitation and habitat degradation as the major causes for decline of gulf sturgeon. The factors leading to the loss of habitat are: impoundments of waterways that block migration and flood habitat, channel modification, and contaminants. The Forest Plan proposes no activities that would affect the water flow or quality of any waterway that may be used by gulf sturgeon.

National forest land along the Apalachicola River is limited to about 7 miles of the east bank. This amounts to about 2.9 percent of the 103 river miles within the State of Florida and an even smaller fraction of the total river system that may be habitat for gulf sturgeons. National forest land along the Ochlockonee River is limited to about 31 miles of the east bank and 19 miles of the west bank. This is about 25.6 percent and 15.7 percent, respectively, of the 121 river miles within the State of Florida and an even smaller fraction of the total river system that may be habitat for the gulf sturgeons. The revised Forest Plan assigns a DFC to the bottomlands of both the Apalachicola and Ochlockonee Rivers that is unsuitable to hardwood timber production. This will greatly reduce if not totally eliminate any impacts Forest Service management may have on the gulf sturgeon. Tributary waterways that are outside of the bottomlands but may affect the water quality of these river systems are protected by the standards and guidelines in the Forest Plan. These standards and guidelines follow the State BMPs, which have been strengthen in some situations. The State BMPs were developed by a team of land managers to ensure that land management practices would not have an adverse affect on water quality.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT" gulf sturgeon.

Fat Three-Ridge Mussel, Shiny-Rayed Pocketbook, Gulf Moccasinshell Ochlockonee Moccasinshell, Oval Pigtoe, and Purple Bankclimber Mussel

Habitat loss is the major factor contributing to the current status of these mussels. The contributing factors to the loss of habitat are: impoundments and deteriorating water and benthic habitat quality resulting from channel modification, siltation, agricultural runoff, crop monoculture and poultry farms, silvicultural activities, mining activities, pollutants, poor land use practices, increased urbanization, and municipal and industrial waste discharges (*Federal Register*, 1994).

Observations of a July 20-22, 1993 field review by Forest Service and U.S. Fish and Wildlife Service biologists indicated that the lower, unimpounded reaches of these rivers could provide habitat for these species. The fat three-ridge mussel and purple bankclimber mussel have been collected from the Apalachicola River adjacent to the forest. The purple bankclimber mussel has been collected from the Ochlockonee River within the boundaries of the forest.

National forest land along the Apalachicola River is limited to about 7 miles of the east bank. This amounts to about 2.9 percent of the 103 river miles within the State of Florida and an even smaller fraction of the total river system that may be habitat for these species. National forest land along the Ochlockonee River is limited to about 31 miles of the east bank and 19 miles of the west bank. This amounts to about 25.6 percent and 15.7 percent, respectively, of the 121 river miles within the State of Florida and an even smaller fraction of the total river system that may be habitat for these species. The revised Forest Plan assigns a DFC that is unsuitable to hardwood timber production to the bottomlands of both the Apalachicola and

Ochlockonee Rivers. This will greatly reduce, if not almost totally eliminate, any impacts forest management may have on these species.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT'' the fat three-ridge mussel, shiny-rayed pocketbook, gulf moccasinshell, Ochlockonee moccasinshell, oval pigtoe, or purple bankclimber mussel.

Apalachicola Rosemary

There are no records of occurrence for this species on the forests at this time. There is very little if any potential habitat or likelihood that this plant occurs on the forests. If specimens of Apalachicola rosemary are located on the forests in the future a further evaluation of management activities will be necessary to ensure the viability of Apalachicola rosemary on the forests.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* will have ``NO AFFECT'' on Apalachicola rosemary.

Harper's Beauty, White Birds-in-a-Nest, Florida Skullcap, and Godfrey's Butterwort

Habitat alteration is the major threat facing these species on the forests. Activities that could impact these species include timber harvest activities, site preparation for timber management, stocking density of pine stands, road maintenance and reconstruction activities, plowing of firelines, and prescribed burning.

Effects of timber harvest activities can be the result of harvest equipment impacting individuals, changes in the soil conditions, rutting from harvest activities, and changing the light conditions on the forest floor from the removal of trees. Negative effects from the operation of harvest equipment can be reduced by following the BMPs and the standards and guidelines in the Forest Plan under ``Watershed and Air.'' Site-specific evaluations also will minimize direct effects by helping to avoid areas of known populations of these species and species on the forests' sensitive species list. Any changes in light conditions from harvest activities will be positive as all of these species favor high light conditions and the removal of trees will increase light levels to the forest floor.

Site preparation has the potential to improve or degrade habitat conditions for these plant species. Mechanical site preparation can have detrimental effects for these plant species, if there is disturbance to the underground portion of the plant or there are changes in the hydrology of the site. Prescribed fire as a site-preparation method would have beneficial effects as it more closely simulates the disturbance that maintained the natural conditions under which these plant species evolved. Forestwide standards VG-17 and VG-18 seek to minimize the detrimental effects of some forms of site preparation, chemical and mechanical, and maximize the use of prescribed fire as a management tool.

Stocking density of timber stands is an important factor in the health of these

species. If stocking density is too high, light levels for these plant species will be inadequate and will have a negative effect.

Forestwide standard VG-21 sets restocking guides for the various pine species. The lower limits have been reduced from the Regional guides to allow for flexibility in management, especially ecosystem considerations like PETS species management. An objective of the Forest Plan is to create conditions on 45,000 to 55,000 acres of longleaf and slash pine that allow more sunlight onto the forest floor. This objective will benefit the above plant species.

Road maintenance and reconstruction activities can affect these plant species, especially Harper's beauty, since many individuals known to exist occur along State Highway 65 in the Apalachicola NF. The Florida Department of Transportation has an easement with the Forest Service for use of the right-of-way for State Highway 65. This easement has a condition that specifies mowing of the right-of-way can only occur after seed maturation. Activities occurring in relation to Forest Service roads will be evaluated on a site-specific basis as these activities occur. Potential effects include direct mortality due to equipment use along roadways and changes to habitat adjacent to roadways.

Firelines for wildland fire suppression and prescribed burning have the potential to affect these plant species. Direct mortality may occur if individuals are uprooted or crushed during fireline construction. Firelines also can change the hydrology of an area enough to have negative impacts on these and other plant species. Firelines along ecotones can prevent fires from entering these areas where fire plays a natural role. This can disturb the natural processes and allow competing vegetation to displace these and other plant species that occur in these ecotones. Forestwide standards FI-7, FI-8, FI-13, and VG-2 seek to minimize the detrimental effects of firelines by minimizing the use of firelines and rehabilitating them, unless doing so causes unacceptable damage.

Fire is probably the greatest natural force affecting these plant species. The Forest Service attempts to mimic the effects of natural fire by prescribe burning. The proposed burning schedule—return interval and season of burn—attempts to follow, as closely as practical, the natural cycle of fire as we know it. This proposed burning schedule should have positive effects for these plant species since they all evolved under conditions that developed largely due to frequent lightning-season fire.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT'' Harper's beauty, white birds-in-a-nest, Florida skullcap, or Godfrey's butterwort. Individuals of these species could be killed by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. The number of individuals affected cannot be determined but should be insignificant as these would be chance encounters. Habitat conditions for these species will be maintained or improved on the forests from the implementation of the Forest Plan.

Florida Bonamia, Scrub Buckwheat, and Small Lewton's Milkwort

Habitat alteration is the major threat facing these species on the forests. This alteration can result from timber harvest activities, site preparation for timber management, density of stands, road maintenance and reconstruction activities, plowing of firelines, prescribed burning, and natural succession of the sand pine scrub community.

Effects of timber harvest activities can be the result of harvest equipment impacting individuals, changes in the soil conditions, rutting from harvest activities, and changing the light conditions on the forest floor from the removal of trees. Negative effects from the operation of harvest equipment can be reduced by following the standards and guidelines in the Forest Plan. Site-specific evaluations also will minimize direct effects by helping to avoid areas of known populations of these species. Any changes in light conditions from harvest activities will be positive as all of these species favor high light conditions and the removal of trees will increase light levels to the forest floor. Timber harvest of the sand pine on mature sand pine scrub is currently the best surrogate for the natural fires that regenerated these areas in the past.

Site preparation has the potential to improve or degrade habitat conditions for these plant species. Heavy mechanical site preparation can have detrimental effects for these plant species if there is disturbance to the underground portion of the plant. Hartnett and Richardson (1989) have shown that Florida bonamia has long-lived fleshy root systems that enable the plant to recover rapidly after fires, and that the plant also maintains substantial seed banks in the soil. Light mechanical site preparation, like single chop or prescribed fire, could have beneficial effects as it more closely simulates the natural disturbance conditions under which these plant species evolved.

Stocking density of sand pine stands is an important factor in the health of these species. If stocking density is high, light levels for these plant species will be inadequate and will have a negative effect. Forestwide standard VG-21 sets restocking guides for the various pine species. The lower limits have been reduced from the Regional guides to allow for flexibility in management, especially ecosystem considerations like PETS species management. These scrub species will persist longer in sites with a low

stocking density and patchy distribution of the regeneration as sunlight will have areas to penetrate to the forest floor.

These species are often located along roadways. There are several reasons for this. First, habitat conditions are favorable along roadways, high light conditions and little competition from woody vegetation. Last, when growing in favorable conditions these species are in a form, vegetative and sometimes flowering, that makes identification fairly easy. Road maintenance and reconstruction activities can affect these plant species. Activities occurring in relation to Forest Service roads will be evaluated on a site-specific basis as these activities come about. Potential effects include direct mortality due to equipment use along roadways and changes to habitat adjacent to roadways.

Firelines for wildland fire suppression and prescribed burning have the potential to affect these plant species. Direct mortality may occur if individuals are uprooted or crushed during fireline construction. Firelines along the ecotone between high pine areas and scrub can prevent fires from entering these areas where fire plays a natural role. This can disturb the natural processes and allow competing vegetation to displace these and other plant species that occur in these ecotones. Forestwide standards FI-7, FI-8, and FI-13 seek to minimize the detrimental effects of firelines by minimizing the use of firelines and rehabilitating them, unless doing so causes unacceptable damage.

Fire was probably the greatest natural force affecting these plant species. The Forest Service attempts to mimic the effects of natural fire by prescribe burning. However, burning sand pine scrub is difficult because of several factors: the intense nature with which mature sand pine scrub burns, the large number of individuals that live within the forests, and the economic value of the timber in a mature sand pine stand. These factors limit the amount of acres of mature sand pine that the Forest Service burns in mature sand pine scrub. As mentioned above the Forest Service uses timber harvest to simulate the effects of burning in sand pine scrub. Forestwide standard VG-3 and forestwide objective 4 seek to maintain habitat in sandhill communities and the ecotones between the longleaf pine-turkey oak and sand pine scrub through the use of prescribed fire.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florid*a ``MAY AFFECT'' Florida bonamia, scrub buckwheat, or small Lewton's milkwort. Individuals of these species could be killed by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. The number of individuals affected cannot be determined but should be insignificant as these would be chance encounters. Habitat conditions for these species will be maintained or improved on the forests from the implementation of the Forest Plan.

Summary of Determinations

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* will have ``NO AFFECT'' on Apalachicola rosemary.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT'' Florida panther,

gray bat, Florida manatee, bald eagle, wood stork, American alligator, and gulf sturgeon.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT'' the RCW. RCW nestlings could be killed and nests lost through the use of prescribe fire during nesting season. Cavity trees also may be rendered unsuitable for RCW use if damaged by fire. The number of individuals affected cannot be determined but should be insignificant as these would be infrequent and chance encounters. Protection measures used during prescribed burning will reduce the possibility of nestling and/or cavity tree damage. Prescribed burning will improve habitat on the national forests for RCWs and result in positive long-term effects.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT'' the Florida scrub-jay. Scrub-jay nestlings could be killed and nests lost through the use of prescribed fire in suitable scrub-jay habitat. The number of individuals affected cannot be determined but should be insignificant as these would be infrequent and chance encounters. Prescribed burning will improve habitat on the national forests for Florida scrub-jays and result in positive long-term effects.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT'' the sand skink and eastern indigo snake. Individuals of these species could be killed by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. The number of individuals affected cannot be determined but should be insignificant as these would be chance encounters. Habitat conditions for these species will be maintained or improved on the national forests from the implementation of the Forest Plan.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``NOT LIKELY TO ADVERSELY AFFECT'' the fat three-ridge mussel, shiny-rayed pocketbook, gulf moccasinshell, Ochlockonee moccasinshell, oval pigtoe, or purple bankclimber mussel.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``MAY AFFECT'' Harper's beauty, white birds-in-a-nest, Florida skullcap, Godfrey's butterwort, Florida bonamia, scrub buckwheat, or small Lewton's milkwort. Individuals of these species could be killed by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. The number of individuals affected cannot be determined but should be insignificant as these would be chance encounters. Habitat conditions for these species will be maintained or improved on the forests from the implementation of the Forest Plan.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* ``NOT LIKELY TO JEOPARDIZE THE CONTINUED EXISTENCE, OR RESULT IN DESTRUCTION OR ADVERSE MODIFICATION OF PROPOSED CRITICAL HABITAT'' for the flatwoods salamander. Individual flatwoods salamanders could be killed by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. The number of individuals affected cannot be determined but should be insignificant as these would be chance encounters. Habitat conditions

for this species will be maintained or improved on the national forests from the implementation of the Forest Plan.

Implementation of the *Revised Land and Resource Management Plan for National Forests in Florida* is ``MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO CAUSE A TREND TO FEDERAL LISTING OR A LOSS OF VIABILITY" for the Florida black bear.

/s/ Gregory E. Titus 9-17-98

Gregory E. Titus
Wildlife Biologist
National Forests in Florida

Date

References

Apalachicola Bear Management Committee. 1995. *Habitat management guidelines for the Apalachicola black bear population.* Committee Report.

Beyer, D. E., Jr., et al. 1996. ``Habitat Quality and Reproduction of Red-Cockaded Woodpecker Groups in Florida." *J. Wildlife Management* 60(4):826-835.

Campbell, H. W., and S. P. Christman. 1982. ``The Herpetological Components of Florida Sandhill and Sandpine Scrub Association." Pp. 163-171. In *Herpetological Communities*. Edited by N. J. Scott. U.S. Fish and Wildlife Service, Research Report 13. Washington, DC.

Clewell, A. F. 1985. *Guide to the Vascular Plants of the Florida Panhandle.* University Presses of Fla., Gainesville.

Conner, R. N., and D. C. Rudolph. 1995. ``Excavation dynamics and use patterns of red-cockaded woodpecker cavities: relationships with cooperative breeding." Pp. 343-352. In *Red-cockaded Woodpecker: Species Recovery, Ecology, and Management*. Edited by D. L. Kulhavy, R. G. Hooper, and R. Costa. Stephen F. Austin Univ., Nacogdoches, TX.

deMaynadier, P. G., and M. L. Hunter, Jr. 1995. ``The Relationship Between Forest Management and Amphibian Ecology: A Review of the North American Literature." *Environmental Reviews* 3:230-261.

Federal Register. 1994. ``Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for Five Freshwater Mussels and Proposed Threatened Status for Two Freshwater From Eastern Gulf Slope Drainages of Alabama, Florida, and Georgia." Vol. 59, No. 148, Wednesday, August 3, 1994. Pp. 39524-39532.

Florida Game and Fresh Water Fish Commission. 1991. *Ecology and development-related habitat requirements of the Florida scrub-jay.* Prepared by J. W. Fitzpatrick, G. E. Woolfenden, and M. T. Kopeny. Nongame Wildlife Program Technical Report No. 8, Tallahassee, FL.

_____. 1993. *Management of the Black Bear in Florida*.

Godfrey, R. K. 1979. ``Macbridea alba." *In Rare and Endangered Biota of Florida*. Vol. 5. *Plants*. Edited by D. B. Ward. University Presses of Florida, Gainesville.

Godfrey, R. K., and J. W. Wooten. 1981. *Aquatic and Wetland Plants of Southeastern United States*. *Dicotyledons.* Univ. of Georgia Press, Athens.

Harris, L. D. 1984. *The Fragmented Forest.* Univ. of Chicago Press, Chicago.

Hartnett, D. C., and D. R. Richardson. 1989. ``Population biology of Bonamia grandiflora (Convolvulaceae): effects of fire and seed bank dynamics." *Amer. J. Botany* 76:361-369.

Hooper, R. G. 1988. ``Longleaf pines used for cavities by red-cockaded woodpeckers." *J. of Wildlife Management* 52 (3): 392-398.

Hooper, R. G., and M. R. Lennartz. 1995. ``Short-Term Response of a High Density Red-Cockaded Woodpecker Population to Loss of Foraging Habitat." Pp. 283-302. In *Red-Cockaded Woodpecker: Species Recovery, Ecology, and Management*. Edited by D. L. Kulhavy, R. G. Hooper,

and R. Costa. Stephen F. Austin Univ., Nacogdoches, TX.

Hovis, J. A., and R. F. Labisky. 1985. ``Vegetative Associations of Red-Cockaded Woodpecker Colonies in Florida." *Wildlife Soc. Bull*. 13:307-314.

James, F. C., C. A. Hess, and D. Kufrin. 1997. ``Species-Centered Environmental Analysis: Indirect Effects of Fire on Red-Cockaded Woodpeckers." *Ecological Applications* 7(1):118-129.

La Val, R. K., et al. 1977. ``Foraging behavior and nocturnal activity patterns of Missouri bats, with special emphasis on the endangered species Myotis grisescens and Myotis sodalis." *J. Mammal* 58:592-599.

Maehr, D. S. 1992. ``Florida black bear." Pp 265-275. In S. R. Humphrey, *Rare and Endangered Biota of Florida.* Vol. 1. *Mammals*. University Presses of Florida.

Maehr, D. S., and J. R. Brady. 1984. ``Food Habits of Florida Black Bears." *J. Wildlife Management* 48:230-235.

_____. 1982. ``Fall food habits of black bears in Baker and Columbia counties, Florida." *Proc. Annual Conf. Southeast. Assn. Fish and Wildlife Agencies* 36:565-570.

Maehr, D. S., E. D. Land, and J. C. Roof. 1991. ``Social Ecology of Florida panthers." *National Geographic Research & Exploration* 7(4):414-431.

Moler, P. E. 1992. ``Eastern indigo snake." Pp. 181-186. In P. E. Moler, *Rare and Endangered Biota of Florida.* Vol. 3. *Amphibians and Reptiles*. University Presses of Florida, Gainesville.

Porter, M. L., and R. F. Labisky. 1986. ``Home Range and Foraging Habitat of Red-Cockaded Woodpeckers in Northern Florida." *J. Wildlife Management* 50(2): 239-247.

Rogers, L. L. 1976. ``Effects of mast and berry crop failures on survival, growth, and reproductive success of black bears." *N. Amer. Wildlife Conf.* 41:431-438.

Speake, D. W., J. A. McGlincy, and T. R. Colvin. 1978. ``Ecology and Management of the Eastern Indigo Snake in Georgia: A Progress Report." Pp. 64-73. In: *Proceedings of Rare and Endangered Wildlife Symposium.* Edited by R. R. Odum and L. Landers. Technical Bulletin 4, Game and Fish Division, Georgia Department of Natural Resources.

Tuttle, M. D. 1976. ``Population Ecology of the Gray Bat (*Myotis grisescens*): Philopatry, Timing, and Patterns of Movement, Weight Loss During Migration, and Seasonal Adaptive Strategies." Occasional Paper 54:1-38. Museum Natural History, Univ. of Kansas.

_____. 1979. ``Status, causes of decline, and management of endangered gray bats." *J. Wildlife Management* 43(1):1- 17.

U.S. Department of Agriculture, Forest Service. 1995. *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region*. Management Bulletin R8-MB 73 Vol. 1-3. Atlanta, GA.

_____. 1990. *Silvics of North America*. Vol. 1. *Conifers*. Agriculture Handbook 654.

_____. 1990. *Silvics of North America*. Vol. 2. *Hardwoods*. Agriculture Handbook 654.

_____. 1983. *A report on some rare, threatened, or endangered forest-related vascular plants of the South.* Prepared by R. Kral. Tech. Publ. R8-TP 2. 2 Vols.

_____. 1971. *Diseases of forest and shade trees of the United States*. G. H. Hepting. Agriculture Handbook 386. Washington, DC.

U.S. Department of Interior, Fish and Wildlife Service. 1998. ``Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Five Freshwater Mussels and Threatened Status for Two Freshwater Mussels From the Eastern Gulf Slope Drainages of Alabama, Florida, and Georgia" *Federal Register* 63(50): 12664-12687.

_____. Undated. *Habitat Management Guidelines for the Wood Stork in the Southeast Region.*

_____. 1994a. *Recovery Plan for Apalachicola Rosemary (Conradina glabra)*. Atlanta, GA.

_____. 1994b. *Recovery Plan for Four Plants of the Lower Apalachicola Region, Florida: Euphorbia telephioides (Telephus spurge), Macbridea alba (White birds-in-a-nest), Pinguicula ionantha (Godfrey's butterwort), Scutellaria floridana (Florida skullcap).*

_____. 1993a. ``Endangered and threatened wildlife and plants; endangered or threatened status for seven central Florida plants." *Federal Register* 58(79): 25746-25755.

_____. 1993b. ``Endangered and threatened wildlife and plants; endangered or threatened status for five Florida plants." *Federal Register* 58(131):37432-37443.

_____. 1989. *Florida Manatee Recovery Plan*. Atlanta, GA.

_____. 1989. *Recovery Plan for the Southeastern States Bald Eagle*. Atlanta, GA.

_____. 1987. ``Endangered and threatened wildlife and plants: determination of threatened status for bonamia grandiflora (Florida bonamia)." *Federal Register* 52(21):42068-42071.

_____. 1987. ``Endangered and threatened wildlife and plants: Determination of threatened status for two Florida Lizards." *Federal Register* 52(215): 42658-42662.

_____. 1987. *Florida Panther (Felis concolor coryi) Recovery Plan*. Prepared by the Florida Panther Interagency Committee for the U.S. Fish and Wildlife Service, Atlanta, GA.

_____. 1987. *Habitat Management Guidelines for the Bald Eagle in the Southeast Region.* Third revision.

_____. 1986b. *Recovery Plan for the U.S. Breeding Population of the Wood Stork*. Atlanta, GA.

_____. 1985. *Recovery Plan for the Red-cockaded Woodpecker*. Atlanta, GA.

_____. 1983. *Harper's Beauty Recovery Plan*. Prepared by Levester Pendergrass, USDA, Forest Service. Revised by U.S. Fish and Wildlife Service, Southeast Region.

_____. 1982a. *Eastern Indigo Snake Recovery Plan*. Atlanta, GA.

_____. 1982b. *Gray Bat Recovery Plan*. Prepared by the U.S. Fish and Wildlife Service in cooperation with the Gray Bat Recovery Team. Atlanta, GA.

_____. 1978. Part 17 - ``Endangered and Threatened Wildlife and Plants; Listing of the Eastern Indigo Snake as a Threatened species." *Federal Register* 43 (21):4026-4028.

U.S. Department of Interior, Fish and Wildlife Service and Gulf States Marine Fisheries Commission. 1995. *Gulf Sturgeon Recovery/Management Plan.* Atlanta, GA.

Wahlenburg, W. G. 1946. *Longleaf Pine -Its Use, Ecology, Regeneration, Protection, Growth, and Management.* C. Lathrop Pack Forestry Foundation, Washington, DC.

Wood, G. W., et al. 1985. ``Compatibility of Even-Aged Timber Management and Red-Cockaded Woodpecker Conservation." *Wildlife Soc. Bull.* 13:5-17.

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Attachment A

Red-cockaded Woodpecker Monitoring and Mitigation for the Apalachicola Red-cockaded Woodpecker Habitat Management Area

Monitoring is chiefly aimed at assessing the effects of the reduced foraging standard for the Apalachicola red-cockaded woodpecker habitat management area (RCW HMA).

The Forest Service will select a random sample of 200 active RCW clusters to use as permanent monitoring points.

Each of these clusters would be checked annually for activity status, banded, and monitored during the breeding season.

Data to be collected would include but would not be limited to:

- cluster activity status
- group size
- groups attempting to nest
- groups successfully nesting
- number of eggs laid per active group
- number of chicks that reach banding age
- number of fledglings per active group

Data will be collected before and after timber harvest for all selected groups. A comparison of the treated groups and untreated groups will be made for the above variables. These are variables that have been shown to indicate RCW population health. If the treated groups show a decline during 3 consecutive years for one variable with a significance level of 0.05 in before and after treatment levels when compared to the untreated groups, section 7 consultation would be initiated. The Forest Service will use a variety of analysis techniques to analyze the collected data. These may include: paired comparisons, time series, before and after analysis or ANOVA (analysis of variance).

Additionally, the Forest Service will be able to infer the effects of other management activities using this sample of clusters and applying the same analysis technique. A wide variety of factors could be examined including prescribed burning, season of burn, proximity to roads, or other disturbances.

The above proposed monitoring would constitute the majority of the monitoring of the Apalachicola RCW HMA. Surveys associated with project work would continue. These would include surveys of suitable habitat project areas and monitoring of recruitment stands that have been provisioned with artificial cavities.

Attachment B

Comparison of FORPLAN Scrub-Jay Habitat Outputs

The preferred alternative (Alternative E) FORPLAN model was run using two different objective functions, maximum scrub-jay habitat output and maximum present net worth. A comparison of the scrub-jay habitat index output form these runs shows an average difference of 0.3 percent per 10-year period during the first five decades. Further explanation of the FORPLAN model can be found in Chapter 3, ``Affected Environment and Environmental Consequences," and Appendix B, ``Analysis Process," of the FEIS.

	1st decade	2nd decade	3rd decade	4th decade	5th decade
Preferred Alternative (Alternative E) Scrub-Jay Habitat Maximum Objective					
Hatchet Index	42,178	45,112	45,158	45,203	45,248
Preferred Alternative (Alternative E) Present Net Worth Maximum Objective					
Hatchet Index	41,953	44,876	45,106	45,151	45,196
Difference Scrub-Jay Habitat Maximum vs. Present Net Worth Maximum					
Percent	0.54	0.53	0.12	0.12	0.12

Endangered Species Act Consultation - See Biological Opinion and conference report below.

United States Department of the Interior

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IN REPLY REFER TO:
FWS/R4/ES-JAFL

DEC 18 1998

Ms. Elizabeth Estill
Regional Forester
U.S.D.A. Forest Service
1720 Peachtree Road NW
Atlanta, Georgia 30367-9102

Dear Ms. Estill:

This document transmits the Fish and Wildlife Service's (Service) biological opinion and conference report on the proposed Revised Land and Resource Management Plan on National Forests in Florida (Plan) (FWS Log No: 98-891), in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). The Forest Service's September 18, 1998, letter requesting formal consultation was received on September 21, 1998; consultation was initiated on the latter date.

The biological and conference opinions are based on information provided in the September 18th letter, several meetings, and other sources of information. A complete administrative record of this consultation is on file in the Jacksonville Field Office.

CONSULTATION HISTORY

On May 6, 1997, the Department of Interior provided comments on the Draft Environmental Impact Statement and Draft Land and Resource Management Plan . On July 8, 1997, a meeting was convened at Osceola National Forest (OsNF) to discuss our May 6, 1997, comments. On March 27, 1998, the Forest Service (FS) provided drafts of the Final Environmental Impact Statement (FEIS) and Final Land and Resource Management Plan (Plan), and requested that we review the documents. On April 30, 1998, the Service provided comments on the final documents.

On June 1 and 2, 1998, a second meeting was held in the Service's Jacksonville Field Office to further discuss our concerns. On July 17, 1998, the FS provided advanced copies of sections of the Plan pertaining to issues raised earlier by the Service. On August 10, 1998, the Service teleconferenced with the FS on unresolved issues.

On August 17, 1998, a third meeting was held at the Forest Service's State Office in Tallahassee for further resolution of issues. On August 27, 1998, the FS submitted further revisions of the Biological Assessment (BA) based on the August 17th meeting.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

The proposed action is the implementation of the Land and Resource Management Plan for the National Forests in Florida. The Plan sets management direction for the Ocala (OcNF), OsNF and Apalachicola (ANF) National Forests for the next 10 to 15 years (refer to the FEIS and Final Plan for management strategies).

The FS evaluated the affect of implementing the preferred Alternative, Alternative E, on those species listed in the attached table. The FS determined may affect for the 11 following species: red-cockaded woodpecker, Florida scrub-jay, sand skink, eastern indigo snake, Harper's beauty, white birds-in-a-nest, Florida skullcap, Godfrey's butterwort, Florida bonamia, scrub buckwheat, and small Lewton's milkwort. The FS determined "not likely to jeopardize" for the proposed threatened flatwoods salamander.

The FS determined not likely to adversely affect for the remaining 13 listed species. Based on the Service's review of the BA, FEIS and Plan, we concur with the FS's determination of not likely to adversely affect for these species.

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes the biology and ecology as well as information regarding the status and trends of the individual threatened and endangered species throughout its entire range. The Service uses this information to assess whether a Federal action is likely to jeopardize the continued existence of the species. The "Environmental Baseline" section summarizes information on status and trends of the species, specifically within the action area. These summaries provide the foundation for the Service's assessment of the effects of the proposed action, as presented in the "Effects of Action" section.

The FS prepared individual species accounts for the BA, which included life histories, population dynamics, and their status and distribution. The Service reviewed these draft accounts, and recommended changes, which were incorporated in the final documents. The reader is referred to the BA for these accounts.

ENVIRONMENTAL BASELINE

The environmental baseline is an analysis of past and current human and natural factors contributing to the current status of the species and its habitat within the action area.

Action Areas

The action areas for this consultation are the three national forests in Florida, OcNF, OsNF and ANF.

Status of the Species in the Action Areas

Please refer to the Species Descriptions section in the FEIS, Appendix F, pages F1-F30 .

Factors Affecting Species Environment within the Action Areas

Please refer to the Species Descriptions section in the FEIS, Appendix F, pages F1-F30 .

EFFECTS OF THE ACTION

This section includes an analysis of the direct and indirect effects of the proposed action on the species and critical habitat and its interrelated and interdependent activities. To determine whether the proposed action is likely to jeopardize the continued existence of threatened or endangered species in the action area, we focus on consequences of the proposed action that affect rates of birth, death, immigration, and emigration because the probability of extinction in plant and animal populations is most sensitive to changes in these rates.

The BA prepared by the FS, in association with the forestwide standards and guidelines outlined in the final Plan, evaluated the effect of implementing Alternative E on the 11 listed species and the one proposed species shown in the attached table. Please refer to the Effects of the Revised Plan Implementation section in the FEIS, Appendix F, pages F28-F56 for a detailed discussion.

The anticipated effects for each of the 11 species are summarized as follows:

Florida Scrub-jay

The FS will conduct larger clear-cuts in the sand pine/scrub habitat, thereby providing larger areas suitable for scrub-jays. This is a significant change from past management practices which limited the acreage of clearcuts. Scrub-jays require large areas of low-growing scrub vegetation, and large clear-cuts on the OcNF will benefit this species. The FS will continue to burn, where possible, sites that have been clear-cut rather than mechanically treat prior to regenerating sand pine.

Three areas will be managed primarily for the benefit of the scrub-jay primarily by fire management; Management Area 8.4 (1,874 acres), the Pinecastle Bombing Range, Management Area 9. 1 (5,500 acres) and portions of the Juniper Prairie Wilderness (8,900 acres).

The FS has committed to initiate a monitoring study on the forest to gather base-line information on the scrub-jay population(s). The Service believes that base-line demographic information is critical to evaluate the effect of the revised timber management plan on this species,.

Red-Cockaded Woodpecker

The FS will follow the *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region.* The Service issued a no jeopardy biological opinion to the FS on May 1, 1995 on the EIS. In the revised forest plan, the FS requested the following exemptions to the ANF from the established guidelines: reduce foraging habitat on the Apalachicola Habitat Management Area, reduce the basal area in stands not considered uneven-aged, and a deviation from the 0-10 year age class for the experimental trials of irregular shelterwood in slash pine. No exemptions were requested for the OsNF or OcNF relating to active clusters.

To evaluate the affect of these exemptions on active clusters on ANF, the FS has committed to conducting a study to monitor clusters that may be affected by these exemptions. A description of the study is found in the monitoring section of the FEIS, Appendix F, Attachment A, page F-61.

Eastern Indigo Snake

The goals, objectives, standards and guidelines in the Plan will maintain or improve habitat conditions on the three forests for this species. Management practices, such as prescribed fire, timber harvest, restrictions on site preparations and the proposed access policy will benefit the eastern indigo snake. It is probable that snakes will be injured or killed as a result of these management practices, but "take" is currently occurring on the three forests. There is no information available to indicate that this unknown level of "take" has significantly affected this species, however.

There will be additional standards, such as WL-11 and 12 which are intended to protect gopher tortoise burrows and standard VG-36 which only permits stumping in areas of proposed roads, facilities, other planned construction, or where their removal is part of an administrative study. This should reduce "take". In the Incidental Take Statement of this opinion, the Service recommends that the FS establish educational material for loggers to further reduce avoidable "take".

Sand Skink

The most serious threat to this species on OcNF is habitat degradation as natural succession precedes in the scrub and sandhill communities. The sand skink probably is directly affected by heavy equipment operation, site preparation, and possibly prescribed fire. The FS has identified several management practices to ensure that areas of suitable habitat remain. The FS believes the

clearcutting and even-aged stand management of sand pines appear to have maintained conditions equivalent to the natural fire regime. We tend to agree, but as we have stated in the past, the sand pine/ scrub ecosystem has adapted over thousands of years to fire, and fire is the preferred method of management.

Permanent loss of habitat through roads and other facilities is expected to be extremely small. We believe the current management on OcNF has resulted in "take" of this species from time to time; however, no dead or injured sand skinks have been recovered. We believe the proposed Plan will benefit this species due to clearcuts and an emphasis on prescribed fire.

Flatwoods Salamander

The primary threat to this proposed threatened species is the loss of both longleaf/slash pine flatwoods and its isolated seasonal breeding ponds. Activities such as timber harvest, site preparation, prescribed fires, road reconstruction and maintenance activities affect this species. In the standard VG-8, hardwood and cypress timber are not to be managed for timber production, thus protecting these small isolated, seasonally flooded ponds. Standard WL-16 provides a primary buffer zone (600-foot-radius) and WL-17 provides a secondary buffer zone (600-1,500-foot-radius) around breeding ponds. Within these zones, mechanical site preparation is prohibited and timber harvest and pesticide applications are restricted. Standard WL-14 states to lessen disturbance to the ground when mechanical preparation is used within one mile of known breeding ponds.

The overall affect of implementing the Plan is to increase protection to this proposed species over current conditions.

Harper's Beauty, White Birds-in-a-Nest, Florida Skullcap, and Godfrey's Butterwort

The above listed plant species found on ANF are most affected by ground-penetrating mechanical site preparation, heavy equipment use, and/or off-road vehicle use. Negative effects from the operation of harvest equipment can be reduced by following Best Management Practices and the standards and guidelines in the Plan under Watershed and Air. Site specific evaluations also will minimize direct effects by helping to avoid areas of known populations of these species. Any changes in light conditions from harvest activities will be positive as all of the species favor high light conditions. An objective of the Plan is to create conditions on 45,000 to 55,000 acres of longleaf and slash pine that will allow more sunlight on the forest floor.

Florida Bonamia, Scrub Buckwheat, and Small Lewton's Milkwort

The above listed plant species found on the OcNF are most affected by ground-penetrating mechanical site preparation, heavy equipment use, density of stands, road maintenance and reconstruction activities, plowing of firelines, prescribed burning, and natural succession of the sand pine/scrub community. Negative effects from the operation of harvest equipment can be

reduced by following Best Management Practices and the standards and guidelines in the Plan, such as VG-18, FI-7 and FI-8. Site specific evaluations also will minimize direct effects by helping to avoid areas of known populations of these species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

We have considered cumulative effects of implementing the final Plan, and have determined that they do not apply in this instance.

CONCLUSION

After reviewing the current status of each of the 11 listed species, the environmental baseline for each action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the implementation of the Revised Land and Resource Management Plan is not likely to jeopardize the continued existence of any of the 11 listed species identified above. No critical habitats have been designated for these species, therefore, none will be affected.

After reviewing the current status of the flatwoods salamander, the environmental baseline for each action area, the effects of the proposed action and the cumulative effects, it is the Service's conference report that implementation of the Revised Land and Resource Management Plan is not likely to jeopardize the continued existence of this species. This is based on the discussion of anticipated impacts (see FEIS, Appendix F, pages F-49 and 50). No critical habitat has been proposed for this species, therefore, none will be affected.

Please refer to the BA for specific information regarding the of impact Alternative E may have on each of the 11 species. The standard and guidelines in the Final Plan outline the measures that will be implemented by the FS to reduce and minimize the effects of the proposed action on these species.

INCIDENTAL TAKE

The Service has developed an Incidental Take statement for each species in which "take" is anticipated. For the remaining species, the Service does not anticipate incidental take.

Plants

Sections 7(b)(4) and 7(o)(2) of the Act do not apply to the incidental take of listed plant species. However, protection of listed plants is provided to the extent that the Act requires a Federal

permit for removal or reduction to possession of endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any State or in the course of any violation of a State criminal trespass law.

Eastern Indigo Snake

Sections 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or to attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" and "harass" are further defined in Service regulations (50 CFR 17.3). "Harm" is defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. "Harass" is defined as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding or sheltering.

Under the terms of sections 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply.

The Federal agency has a continuing responsibility to regulate the activity that is covered by this incidental take statement. If the agency (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service has reviewed the biological information for this species, information presented by the FS, and other available information relevant to this action, and based on our review, the Service anticipates incidental take of Eastern indigo snakes will be difficult to detect for the following reason: the species has a very large home range (in excess of 200 acres) which makes it unlikely of observing this species during normal timber harvest operations, its secretive nature and that finding dead or impaired specimens is unlikely. Therefore, the Service is unable to quantify the level of take that may occur, except to state that some snakes will be taken during normal timber management practices, including site preparation.

The Act does not require that the numbers of individuals to be taken be specified, unless that number can be identified. In this case, estimating the number of individuals to be taken would be

difficult in as much as the anticipated take will occur during normal timber harvest, including site preparation.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species. The level of timber harvest activity on the forests will not increase as a result of the implementation of the Plan; therefore, no additional impacts are anticipated.

Reasonable and Prudent Measures

When providing an incidental take statement the Service is required to give reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. Furthermore, the Service must also specify procedures to be used to handle or dispose of any individuals taken. The Service believes the following reasonable and prudent measures are necessary and appropriate to reduce take:

> The FS shall implement an educational program for timber contractors for the purpose of reducing the intentional killing of Eastern indigo snakes. Implement the Forestwide Standard and Guidelines WL-10-12, found in section 3 of the Plan under Wildlife and Fish, Gopher Tortoise and its Burrow Commensals.

Terms and Conditions

To implement the above reasonable and prudent measure, the Service has outlined the following terms and conditions for incidental take. In accordance with the Interagency Cooperation Regulation (50 CFR 402), these terms and conditions <u>must</u> be complied with to implement the reasonable and prudent measure(s) for incidental take.

> 1) The FS shall develop an educational program, including posters, to alert timber contractors about the possible presence of eastern indigo snakes. The program should include a description of the physical characteristics of the snake, life history and the types of habitats the snake may be found, The educational program shall state that if a snake is observed during the course of harvesting timber, the animal should not be harmed, but permitted to leave the area.
>
> 2) Implement immediately the Forestwide Standards and Guidelines WL-10 through 12.

3) If a dead eastern indigo snake is found, the specimen should be thoroughly soaked in water and frozen, and the FS should notify the Jacksonville Field Office immediately, at 904/232-2580.

Red-cockaded Woodpecker

Please refer to the introductory paragraphs in the Incidental Take statement for the Eastern indigo snake.

Amount or Extent of Take

The Service has reviewed the biological information for this species, information presented by the FS, and other available information relevant to this action, and based on our review, incidental take, in the form of harm or harass, is anticipated for a maximum of 15 active cavity trees per year as a result of prescribed fire on the three national forests. This translates to a maximum of 15 adult red-cockaded woodpeckers harassed. Of the 15 active trees taken, a maximum of one active tree with young (up to 4 chicks) may be lost.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

When providing an incidental take statement the Service is required to give reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. Furthermore, the Service must also specify procedures to be used to handle or dispose of any individuals taken. The Service believes the following reasonable and prudent measures are necessary and appropriate to reduce take:

1) The FS shall make every effort to protect red-cockaded woodpecker trees during prescribed burning operations.

2) Implement the monitoring study on ANF, as described in the FEIS, Appendix F, Attachment A.

Terms and Conditions

To implement the above reasonable and prudent measure, the Service has outlined the following terms and conditions for incidental take. In accordance with the Interagency Cooperation Regulation (50 CFR 402), these terms and conditions must be complied with to implement the reasonable and prudent measure(s) for incidental take.

1) Forestwide standard FI-5 provides protection for red-cockaded woodpecker cavity trees by requiring raking, cutting, wetting down, and/or backfiring of fuels adjacent to active cavity trees. The FS shall insure that this standard is followed on the three forests.

2) The monitoring study, as described in the FEIS, Appendix F, Attachment A, shall have a specific study design completed within the first year of the Revised Plan implementation and the study initiated by the following nesting season.

3) If a dead red-cockaded woodpecker is found, the specimen should be thoroughly soaked in water and frozen, and the FS should notify the Jacksonville Field Office immediately, at 904/232-2580.

Florida Scrub-Jay

Please refer to the introductory paragraphs in the Incidental Take statement for the eastern indigo snake.

Amount or Extent of Take

The Service has reviewed the biological information for this species, information presented by the FS, and other available information relevant to this action, and based on our review, the Service anticipates incidental take of Florida scrub-jay nestlings will be difficult to detect during prescribed burning operations for the following reasons: the nests of Florida scrub-jays are difficult to locate and require extensive search time; and if located, there are no protective measures available, short of postponing the prescribe burning operation, to protect the nest(s). Therefore, the Service is unable to quantify the level of take that may occur, except to state that some Florida scrub-jay nestlings will be taken during prescribed burning operations.

The Act does not require that the numbers of individuals to be taken be specified, unless that number can be identified. In this case, estimating the number of nests and nestlings to be taken would be difficult in as much as the anticipated take will occur during normal timber harvest, and prescribed fire

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species. While some active Florida scrub-jay nests and nestlings may be taken during normal timber management practices, including prescribed fire, the increase level of management on the OcNF for the benefit of this threatened species will significantly increase.

Reasonable and Prudent Measures

When providing an incidental take statement the Service is required to give reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. Furthermore, the Service must also specify procedures to be used to handle or dispose of any individuals taken. The Service believes the following reasonable and prudent measures are necessary and appropriate to reduce take:

1) Implement Florida scrub-jay monitoring studies on OcNF.

2) Implement the Standard and Guidelines in the Plan

Terms and Conditions

To implement the above reasonable and prudent measure, the Service has outlined the following terms and conditions for incidental take. In accordance with the Interagency Cooperation Regulation (50 CFR 402), these terms and conditions must be complied with to implement the reasonable and prudent measure(s) for incidental take.

1) The FS shall have a specific Florida scrub-jay monitoring study design, as outlined in chapter five of the Plan, completed within the first year of the Revised Plan implementation and initiated by the following nesting season. These studies should be of sufficient duration (minimum of 5 years) to establish a trend as to the effect of the Plan on this species in OcNF.

2) The FS shall implement the Standard and Guidelines in the Plan under Management Areas 8.1, 8.2 and 8.4.

3) If a dead Florida scrub-jay is found, the specimen should be thoroughly soaked in water and frozen, and the FS should notify the Jacksonville Field Office immediately, at 904/232-2580.

Sand Skink

Please refer to the introductory paragraphs in the Incidental Take statement for the Eastern indigo snake.

Amount or Extent of Take

The Service has reviewed the biological information for this species, information presented by the FS, and other available information relevant to this action, and based on our review, the Service anticipates incidental take of sand skinks will be difficult to detect during normal timber management practices, including site preparation, for the following reasons: this small, secretive fossorial species is extremely difficult, if not impossible, to detect without expending significant amount of time in conducting extensive surveys, and that finding dead or impaired specimens is unlikely. Therefore, the Service is unable to quantify the level of take that may occur, except to state that some sand skinks will be taken during normal timber management practices,

The Act does not require that the numbers of individuals to be taken be specified, unless that number can be identified. In this case, estimating the number of individuals to be taken would be difficult in as much as the anticipated take will occur during normal timber harvest, and site preparation.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

When providing an incidental take statement the Service is required to give reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. Furthermore, the Service must also specify procedures to be used to handle or dispose of any individuals taken.

> The Service has concluded there are no reasonable and prudent measures available to reduce or minimize "take" of sand skinks on OcNF.

Flatwoods Salamander

Please refer to the introductory paragraphs in the Incidental Take for the Eastern indigo snake.

The prohibitions against taking the species found in section 9 of the Act do not apply until the species is listed. However, the Service advises the FS to consider implementing the following reasonable and prudent measures. If this conference opinion is adopted as a biological opinion

following a listing or designation, these measures, with their implementing terms and conditions, will be non-discretionary.

Amount or Extent of Take

The Service has reviewed the biological information for this species, information presented by the FS, and other available information relevant to this action, and based on our review, the Service anticipates incidental take of flatwoods salamanders will be difficult to detect during normal timber management practices, including site preparation, for the following reasons: this small, secretive amphibian is extremely difficult, if not impossible, to detect without expending significant amount of time in conducting extensive surveys and that finding dead or impaired specimens is unlikely. Therefore, the Service is unable to quantify the level of take that may occur, except to state that some flatwoods salamanders will be taken during normal timber management practices, both inside and outside of the buffer zones,

The Act does not require that the numbers of individuals to be taken be specified, unless that number can be identified. In this case, estimating the number of individuals to be taken would be difficult because the anticipated take will occur during normal timber harvest and site preparation.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

When providing an incidental take statement the Service is required to give reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. Furthermore the Service must also specify procedures to be used to handle or dispose of any individuals taken. The Service believes the following reasonable and prudent measures are necessary and appropriate to reduce take:

- Implement the Forestwide Standards and Guidelines WL-16-19, found in section 3, of the Plan; under Wildlife and Fish, Flatwoods Salamander.

Terms and Conditions

To implement the above reasonable and prudent measure, the Service has outlined the following terms and conditions for incidental take. In accordance with the Interagency Cooperation Regulation (50 CFR 402), these terms and conditions <u>must</u> be complied with to implement the reasonable and prudent measure(s) for incidental take.

1) Implement immediately the Forestwide Standards and Guidelines WL-16 through 19.

2) If a dead flatwoods salamander is found, the specimen should be thoroughly soaked in water and frozen, and the FS should notify the Panama City Field Office immediately, at 904/232-2580.

REINITIATION OF SECTION 7 CONSULTATION

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required when discretionary Federal agency involvement or control over the action has been retained and if: (1) New information reveals effects of the agency action that may effect listed species or critical habitat in a manner or to an extent not considered in this biological opinion, (2) the Forest Service's action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion, or (3) a new species is listed or critical habitat designated that may be effected by the action.

This also concludes the conference on the actions outlined in the request. You may ask the Service to confirm the conference report as a biological opinion issued through formal consultation if the flatwoods salamander is listed. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion on the action and no further section 7 consultation will be necessary.

The incidental take statement provided in this conference report does not become effective until the species is listed and the conference opinion is adopted as the biological opinion issued through formal consultation. At that time, the revised Plan will be reviewed to determine whether any take of the flatwoods salamander has occurred. Modifications of the opinion and incidental take statement may be appropriate to reflect the take. No take of the flatwoods salamander may occur between the listing of this species and the adoption of the conference opinion through formal consultation, or the completion of a subsequent formal consultation.

Sincerely,

Laura P. Gattan

for Steve Forsythe
State Supervisor

cc

Ralph Costa, FWS, Clemson, SC
Stan Simpkins-PCFO, FWS
Don Palmer, FO, FWS

TABLE 1

POTENTIAL SPECIES FOUND IN THE THREE NATIONAL FORESTS IN FLORIDA AND FOREST SERVICE'S DETERMINATION			
Florida panther	*Felis concolor coryi*	endangered	NLAA*
Gray bat	*Myotis grisescens*	endangered	NLAA
Florida manatee	*Trichechus manatus*	endangered	NLAA
Florida scrub-jay	*Aphelocoma coerulescens*	threatened	MAY AFFECT
Bald eagle	*Haliaeetus leucocephalus*	threatened	NLAA
Wood stork	*Mycteria americana*	endangered	NLAA
Red-cockaded woodpecker	*Picoides borealis*	endangered	MAY AFFECT
Eastern indigo snake	*Drymarchon corais couperi*	threatened	MAY AFFECT
Sand skink	*Neoseps reynoldsi*	threatened	MAY AFFECT
Flatwoods salamander	*Ambystoma cingulatum*	proposed	NLJ**
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	threatened	NLAA
Three-ridge mussel	*Amblema neislerii*	endangered	NLAA
Purple bankclimber mussel	*Elliptoideus sloatianus*	threatened	NLAA
Shiny-rayed pocketbook	*Lampsilis subangulata*	endangered	NLAA
Gulf moccasinshell	*Medionidus penicillatus*	endangered	NLAA
Ocklockonee moccasinshell	*Medionidus simpsonianus*	endangered	NLAA
Oval pigtoe	*Pleurobema pyriforme*	endangered	NLAA
Florida bonamia	*Bonamia grandiflora*	threatened	MAY AFFECT
Apalachicola rosemarry	*Conradina glabra*	endangered	NO EFFECT
Scrub buckwheat	*Eriogonum longifolium* var. *gnaphalifolium*	threatened	MAY AFFECT
Harper's beauty	*Harperocallis flava*	endangered	MAY AFFECT
White Birds-in-a-nest	*Macbridea alba*	threatened	MAY AFFECT
Godgrey's butterwort	*Pinquicula ionantha*	threatened	MAY AFFECT
Small Lewton's milkwort	*Polygala lewtonii*	endangered	MAY AFFECT
Florida skullcap	*Scutellaria floridana*	threatened	MAY AFFECT

* Not likely to adversely affect
** Not likely to jeopardize

APPENDIX G

Comments on the Draft Environmental Impact Statement and Responses

This appendix discloses the comments and responses to people who commented on the Draft Environmental Impact Statement (DEIS) and *Proposed Revised Land and Resource Management Plan for National Forests in Florida* (Forest Plan).

The first part of the appendix provides a list of respondents. The list is sorted alphabetically and shows the respondent number, last name, first name and organization if applicable.

The second part of the appendix lists the comments and responses.

Respondents

202 Abbott, Bob
11 Alderson, Doug
153 Alymond, Neil J.
70 Amdor, Robert
392 Anderson, William R.
146 Arnold, Wayne S.
233 Auth, David L.
192 Baker, Deborah B. - Southern Timber Purchasers Council
359 Ball, Robert
353 Banks, James
399 Bantle, Tim
114 Barcenas, Art
249 Barlow, Steve
395 Barone, Jamie
325 Barrie, Craig
126 Barwick, L. L.
382 Beamer, Mark A.
77 Beaty, Jeff - Florida Trail Riders
179 Bell, Theresa & Scott
49 Berard, Eric - Florida Trail Riders/Central Florida Trail Riders
45 Bertini, Pete - Florida Trail Riders/Central Florida Trail Riders
200 Bielling, Margy C.
62 Billie, Bobby C. - Independent Traditional Seminole Nation of Florida
195 Blanchard, Jon - Florida Natural Areas Inventory
364 Boca Cycle
167 Bond, Cheryl
370 Bottonus, Ted
61 Boyer, William D. - USDA Forest Service, Southern Research Station
264 Brasder, Usajk
120 Bridges, John O., Jr. - Hercules, Inc.
66 Briske, Wayne - North Florida South Alabama Motorcycle Club

100 Brooks, Mike - Lake County Dept. of Public Works
119 Brooks, Paul V.
154 Brown, Gregory M.
241 Brown, Rick
79 Brownlee, Eugene - Florida Trail Riders/ Central Florida Trail Riders
86 Brymer, Dan - Hercules, Inc.
165 Buckwald, Scott - Buck's Gun Rack, Inc.
332 Bulnes, Jaime
217 Cahan, David W. - Georgia-Pacific, Forest Resources
294 Cantin, Richard
334 Carl, Shane
215b Carlton, D. C. - Biodiversity Legal Foundation
93 Carmody, Gail A. - USDI Fish and Wildlife Service (Panama City)
131 Carroll, Kip L.
28 Carruthers, Robert
204 Cauthen, Wiley M. - Florida Gas Transmission Company
354 Ceppola, Royce W. & Julie
360 Ceppola, Royce W. & Julie
397 Ceppola, Royce W. & Julie
236 Chambers, Jason
238 Chambers, Kerri
113 Chapple, Rick
208 Chase, Thomas W. & Norene
333 Chersin, Andy & Nancy
80 Clay, Louise S.
161 Clay, Robert L.
328 Cole, Max A.
374 Cole, Tania Lynn
90 Collier, John
256 Collins, Eugene G., & Blake Shiflett - Tallahassee Trail Riders/Florida Trail Riders, Inc.
255 Collins, Rick, & Marcy Irwin - Tallahassee Trail Riders/Florida Trail Riders, Inc.
41 Compton, Glenn - Manasota - 88
177 Conway, Steve
103 Costa, Ralph - USDI Fish and Wildlife Service, Dept. of Forest Resources
340 Costain, Dwayn
335 Costain, Michael
26 Coultas, Charles L.
145 Cox, Dan - Gadsden United, Inc.
379 Crage, Paul
245 Cruz, Maria
239 Cummings, Don
149 Cyr, Cheryl
314 Daley, Lee D.
143 Daniels, Richard
183 Davis, Dave/Jennifer/Savannah
257 Deason, Chris - Tallahassee Trail Riders/ Florida Trail Riders, Inc.
308 DeHart, Don
336 Derringer, A.
273 Dickson, Andy - Florida Trail Riders, Inc. - The Crossroads Church
303 Dickson, R. D.
85 DiPipi, Marc L. - Florida Trail Riders
356 Dlarny, Eve
67 Dopp, Steven - North Central Florida Regional Planning Council
118 Douthitt, Chris
186 Dowdy, Shannon
297 Duran, Joey
265 Dutost, Sam
187 Dye, S.
176 Dye, W. & Patrick
64 Dykes, Joyce - Florida Trail Association
23 Dyksterhouse, Bob - Southeastern Forest Trust
298 Echol, Wendy/Glenn/Steven
260 Elwood, Sherry
371 Emerson, Ben
372 Emerson, Kevin
75 Erickson, Frank W. - Florida Trail Riders
240 Ericsen, Marlene
310 Evans, Kenneth N.
40 Ewing, Andrew, III - River City Dirt Riders
292 Farrar, Paul
301 Fatom, Lee
261 Fenwick, Ben
205 Ferguson, Bob - Sierra Club Member
282 Fesler, Keri Jo
278 Fesler, Robert Scott
305 Fiegl, Frank - Florida Trail Riders, Inc./ American Motorcylce Association
391 Finch, Mike
337 Fink, Art
385 Fink, Jo Ann
191 Flanagan, Michael B. - Columbia County School Board
15 Fogelin, Julia Adrian
312 Franklin, John
148 Frey, Robert - Withlacoochee Dual-Sport Riders Club
44 Fulton, Larry
246 Fulton, Larry
98 Furlong, Jerry L. - Hercules, Inc.
288 Gastatson, Ron
128 Gay, T.R.
60 Geary, Stephen E.
283 George, Daniel T.
254 George, Nick M. - Tallahassee Trail Riders, Inc.
164 Gibbons, Charles B. - Florida Trail Riders/ American Motorcycle Association

220 Gilpin, Tom - Society of American Foresters
134 Giuffreda, Richard A. - Purdy, Jolly & Giuffreda, P.A.
36 Glasgow, T. Niles - USDA, Natural Resource Conservation Service
234 Glitzenstein, Jeff S. - Tall Timbers Research
2 Gluckman, David - Gluckman & Gluckman - Florida Off-Road Bicycle Coalition
12 Glunn, F. John
35 Golby, Cliff
138 Golby, Doris
376 Gonzalez, Humberto
401 Goodwin, Graham
275 Gray, Steve
47 Greenwood, Tim - American Motorcyclist Assn./Florida Trail Riders
285 Grenley, Bob - Daytona Dirt Riders
117 Griffin, Larry - The Family Riders Motorcycle Club, Inc.
171 Haley, Steve
227 Hancock, Judith - Sierra Club, The Florida Chapter
29 Hardy, Elliott
248 Hare, John R.
122 Harkins, John
21 Hartman, Bradley J. - Florida Game and Fresh Water Fish Commission - Office of Environmental Services
69 Harvey, George - Hercules, Inc.
295 Hastings, Rob
27 Hattaway, Robert A. - Florida Dept. of Environmental Protection, Dist. 4 Admin.
188 Hawkins, B. & B.
184 Hawkins, Laurence
378 Helsel, Mark
196 Herbert, Tom - Leon County Science Advisory Committee
280 Hestbeck, Phillip R.
375 Hicks, Richard
156 Higgins, John K. - Coastal Lumber Co.
307 Higgins, Tammy/Joe/Joey
296 Hightower, Richard
327 Hill, Steven W.
68 Hilliard, Marion B. - Florida Federation of Garden Clubs, Inc.
226 Hiss, Maynard L.
84 Hoctor, Tom - Univ. of Florida, Dept. of Wildlife Ecology & Conservation
207 Howell, Vance R. - Taylor County Board of County Commissioners
132 Hughson, William R.
3 Hurst, Marc V. - Standard Sand & Silica Company
225 Hutchinson, Robert - Southeastern Forest Trust, Inc.
124 James, Fran - Florida State Univ., Dept. of Biological Science
281 Jeffers, James & Sabrina
215c Jensen, Holly
181 Johns, Tony
48 Johnson, Twilah - American Motorcyclist Association
16 Joseph, Terry A. - West Florida Regional Planning Council, Clearinghouse
363 Karp, P. N.
152 Kelley, Sandra Gerrell
279 King, Tyler C. - Florida Trail Riders, Inc.
52 Kirkland, Elesa - Florida Trail Riders/ Central Florida Trail Riders
168 Kirkland, R. Colt
73 Kissner, Carlton/Celia Linda
8 Kmet, Ted - Florida Trail Association
91 Kokernoot, Sandra - Putnam County Environmental Leaders Council
194 Koos, Mary Anne - Tallahassee-Leon Co. Bicycle/Pedestrian Advisory Committee
329 Koslofsky, Max
262 Kruger, Helena
286 Krupa, Nick
39 Kuehne, Paul M.
129 Kuhn, Larry H.
136 Lafrance, Stephen
140 Lagasse, R. Al & Jessica - Florida Trail Riders
174 Lalonde, Robert
268 Lamb, Jenni & Scott
347 Langella, Gloria
346 Langworthy, Jason
88 Lee, James H. - USDI Office of Environmental Policy & Compliance
96 Lescoe, William & Barbara
78 Lewis, Tammy - Florida Trail Riders
71 Lewis, William
309 Leyrer, David A.
383 Loleski, Steve
357 Long, William - American Motorcycle Association
108 Longman, Anne - Lewis, Longman & Walker, P.A.
252 Loomis, Steve
300 Lowe, Donnald
398 Lucad, Paul
159 Lundberg, Bob - Stone Container Corp.
215a Maddock, Sidney B. - The Fund for Animals, Inc.
215e Maddock, Sidney B.
34 Manes, Regina L.
388 Manner, David

162 Manning, Terese M. - Marion County Board of County Commissioners
330 Martinez, Edel
127 Maxin, James D. - BMW Communications, Inc.
53 McCard, Doug - Florida Trail Riders/ Central Florida Trail Riders
219 McConnell, Chester - Wildlife Management Institute
160 McConnell, W. V.
17 McDonald, Larry P. - West Florida Regional Planning Council - Senior Planner
158 McGill, William A. - Gadsden County Board of County Commissioners
242 McIntyre, Ken
95 McKenzie, Bob
101 McRae, Finley - North Florida Lumber, Inc.
9 Mead, Richard E.
216 Means, D. Bruce - Coastal Plains Institute and Land Conservancy
326 Menendez, Fernando
112 Mento, Sam & Lori - AMA/Blue Ribbon Coalition/Florida Trail Riders
331 Mero, Anthony
178 Metze, Lewis & Melba
87 Michaels, Robert K., Jr. - Florida Off Road Bicycle Association
244 Michalik, Don
311 Miller, Charles - A.C. Electric of Orlando, Inc.
102 Miller, David - Wakulla County School Board
10 Mills, George Edward - Wakulla County Community Development Dept.
201 Minasian, Leo L., Jr.
197 Minnix, Bradley K.
403 Mirkin, Joshua
142 Missimer, Thomas
271 Moffat, Bruce J.
224 Montgomery, Ed - Rayonier
147 Morgan, Randal L. - Morgan's Car Sales, Inc.
46 Moriarty, Richard T. - Florida Trail Riders/ Central Florida Trail Riders
250 Moro, Roger
4 Morrill, Tom
277 Mulligan, Thomas W.
322 Murk, Greg A.
313 Neal, Tommy G.
130 New, Steve
203 Norman, David
317 Norman, Kevin
121 Odum, J. S. - Foley Timber and Lumber Company
316 Offie, Michael
339 Olsen, John
150 Outcalt, Kenneth W. - USDA Forest Service, Southern Research Station
33 Ovenden, Steve
293 Padro, Mike
170 Park, John W., Jr.
291 Parks, Bonnie & LeAnn
185 Parks, David & Bonnie
14 Peterson, L. Earl - Florida Division of Forestry
1 Phipps, Colin S.
212 Pizzo, Paul R. - Fowler, White, Gillen, Boggs, Villareal and Banker, P.A.
211 Pizzo, Paul R., Jr. - Hogan - Burt
18 Pope, J. Wyatt - Wakulla County Board of County Commissioners
19 Putz, Francis E. - Univ. of Florida, Dept. of Botany
155 Ramsey, Jon - Hercules, Inc.
32 Ray, Ancel H., Jr.
274 Rayhle, Steven A. - Florida Trail Riders, Inc.
387 Resta, Michael
394 Reyes, Ulises
402 Rhoades, Jodi/Steven/Mark
351 Rio, Carlos
355 Rio, Carlos
352 Rivera, Mario
20 Roberts, Judi
89 Roberts, Larry C.
163 Robertson, F. Herbert - Panhandle Chapter, Forida Trail Association
169 Robinson, Austin G.
315 Robinson, Robert
342 Rodriguez, Zack
366 Romcisg, Lincoln
115 Rooks, Thomas G.
50 Roshong, Andrew - Florida Trail Riders
389 Ryzuto, Mary Ellen
361 Sabotko, Ronny
343 Sakamoto, Samantha
55 Salyers, Bill
384 Samoyedny, Sean
22 Sanford, Stan R. - Champion Schwinn Cycling and Fitness
125 Saxton, Lowell
223 Scherf, Brian - Florida Biodiversity Project
215f Scherf, Brian and Rosalyn - Florida Biodiversity Project
209 Schlamp, Chris
137 Schulenberg, Edward P.
92 Schuler, Richard W. - Florida Trail Association, Inc.
139 Sears, Scott
266 Seligman, Michelle

81 Settle, Clara M. - Florida Trail Riders
82 Settle, David - Florida Trail Riders
83 Settle, Robert - Florida Trail Riders
243 Shank, Brian
324 Shealy, Jacqulin
189 Shefer, Steve - Southwest Florida Trail Riders
182 Shelfer, Joe
175 Shelton, Misty
247 Shepard, William & Mary
105 Sheppard, Lane - Seminole Power Sports
43 Shipman, Martin
345 Simon, Pamela
350 Simon, Sandy
7 Simons, Robert W. - Florida Defenders of the Environment
323 Siroton, Matthew
13 Sitler, Robert - Stetson Univ., Dept. of Foreign Languages
58 Skinner, Laura
267 Skrugh, Harry
348 Slattery, Blake
230 Small, Christine - Defenders of Wildlife, Habitat for Bears Campaign
57 Smith, Brock A.
30 Smith, Gregory C.
338 Smith, Josh
289 Smith, Michael
381 Smith, Shelby
213 Smith, Tina L.
56 Smithson, Andy
54 Smithson, Michelle
59 Smithson, Rodger
306 Snider, Darrell
276 Spangler, Vaughn
107 Spontak, Margaret - St. Johns Water Management District
228 Stephens, Gary K. - Hercules, Inc.
258 Stephens, Gary K. - Hercules, Inc.
320 Stern, Robert
393 Stojack, Steve
373 Stone, Jonathan
109 Stowell, Elspeth
232 Studenmund, Richard G. - The Nature Conservancy, Northwest Florida Program
104 Summers, Jack H., Jr. - Superintendent of Schools, Liberty County School System
63 Swanson, John R.
362 Sweigand, Dave
97 Swindall, Joan
341 Taddeo, Paul
94 Taliaferro, Jimmy - M&T Farms
133 Tallbacka, James R.
259 Tallogert, Chris
25 Taylor, W. Jape
231 Terrell, Jack - Florida Trail Riders, Inc.
237 Terrell, Sally
253 Tharp, David & Carol - Florida Trail Riders, Inc.
116 Thomas, Arthur
72 Thompson, Boyd
269 Thompson, Elizabeth A.
31 Thompson, William
37 Thompson, William
65 Thorp, Robert - Florida Trail Riders
199 Tilton, Jim - Hercules, Inc.
206 Tirrell, Roderick - Sierra Club, Broward County Group
287 Travias, Shelia & Albert
157 Tschinkel, Walter R. - Friends of the Apalachicola National Forest
214 Tubaugh, A.W. - BellSouth Telecommunications, Inc.
290 Tucker, Lamar
144 Turgen, Marc
99 Valentine, James
358 Van Baelen, Philip
263 VandeVeer, Dave & Daniel
180 Vann, Ron & Pat
284 Vaughan, Bob - International Plant Corp.
386 Veal, Eric
74 Vedas, Jon - Southern Cycle Inc.
319 Vermitt, Trevor - Boca Cycle
193 Vogel, Jack - Florida Forestry Association
218 Voigts, David K. - Florida Power Corp., Environmental Services Dept.
38 Walls, Frank L.
42 Weber, Tim - Florida Trail Riders, River City Dirt Riders
272 Weeks, James & Karen
221 Weesner, Darlene - Shady Historic & Scenic Trails Association
304 Weitzel, Dean - Florida Trail Riders, Inc.
106 Wernicke, Roger M.
302 West, Scott
229a White, David - Public Interest Environmental Law of Counsel
229b White, David - Florida Audubon Society
229c White, David - Florida Chapter of the Sierra Club
229d White, David - Florida Wildlife Federation
229e White, David - Coastal Plains Institute
229f White, David - Florida Defenders of the Environment
111 Whited, Steven - Smith Creek Land Owners Association
368 Whitley, Jamie
222 Whitney-Yeager, Ellie
367 Wicke, Hank
24 Williams, Gary
349 Williams, James

151 Williams, Raymond - Franklin County Board of County Commissioners
270 Williams, Timothy M.
141 Wilson, Hans - Southwest Florida Trail Riders
377 Wilson, Paul M.
76 Wirth, Ron
251 Woeber, Mike
110 Wood, Jim - Florida Dept. of Environmental Protection
173 Woodson, David H., Jr.
135 Worley, Mike - Florida Trail Riders
190 Wrobel, Greg - Southwest Florida Trail Riders
299 Wunderlich, Johnny, III
166 Wynn, Robert C. - Hercules, Inc.
210 Wyrough, William E., Jr. - Tallahassee Trail Riders
172 Yarbrough, Thomas
235 Youngblood, Dave - North West Florida Rural Property Owners Association
215d Youngblood-Petersen, Tom - Wildlands Center for Preventing Roads
198 Zeorlin, Charles P.
123 Zobel, Scott - Rayonier
51 Illegible
318 Illegible
321 Illegible
344 Illegible
365 Illegible
369 Illegible
380 Illegible
390 Illegible
396 Illegible
400 Illegible

Comments and Responses

Following is a listing of comments and responses. The comments are sorted by subject and respondent numbers are listed by the comment. The comments were identified in each letter, given a subject code, and entered into a data base for sorting. Similar comments were grouped by subject with a single response. The comments do not include the entire text of comment letters, but portions that make a direct statement which can be given responses. The comments were not edited except for adding some information in brackets for clarity. The original letters are on file in the process records. Comment page numbers refer to the Draft Environmental Impact Statement (DEIS) or the Proposed Forest Plan.

Access

2 - Motorized Vehicles—access should be on numbered roads, unmarked travelways specified and appropriate special use area designated for their activities.

Response: The Forest Plan prohibits cross-country traffic by bicycles and motorized vehicles; therefore motorized vehicles will be on open, numbered roads, designated trails, and unmarked travelways in the forest.

9 - Alternative E includes OHRVs, their inclusion appears more the beginning of its exclusion by way of over regulation. Alternative E appears to deal harshly with OHRVs.

Response: The Forest Plan prohibits cross-country travel by bicycles and off-highway vehicles (OHVs). We feel this is not overly restrictive for two reasons: (1) cross-country travel by OHVs is generally done by a very small percentage of our users; and (2) there are still hundreds of miles of open, numbered roads and unmarked travelways that OHVs can use in most portions of the forest, and the 2-year access process will identify more trails for specific uses that can be designated and marked on the ground.

9 - There appears to be no distinction between two wheel OHRVs and larger four wheel drive vehicles, such as Jeeps.

Response: You are correct. The Forest Plan does not make site-specific decisions that would distinguish between these two motorized uses. It would be during the 2-year public involvement process where the needs of each of these users would be identified and met.

9, 65, 114, 231 - Request the new plan include specific language that recognizes the existence of these trails [user-created, unmarked travelways] and include them as acceptable riding trails.

Response: Motorized use on the existing and historically used trails and unmarked travelways will continue; it is the cross-country travel that is being prohibited. In some of the more sensitive areas of the forest, motorized use will be restricted to open, numbered roads and designated trails. These trails will be identified and designated during the 2-year public involvement process.

10 - Alternatives A, B, D, and E propose to limit or stop the use of motorized vehicles and propose an obliteration plan for roads that are not currently numbered.

Response: These alternatives include closure of some roads on the road system. These are roads built specifically to get into an area for harvesting a timber sale. After the sale is completed, closure is permitted, since the roads are no longer needed for timber harvesting. It is not an attempt to limit or stop motorized use; it is a matter of economics. We cannot continue to maintain these road when they are not needed.

10 - Wakulla citizens fear the push to outlaw hunting is behind the vehicle use prohibition and road obliteration proposals.

Response: This is not the reason behind prohibiting cross-country travel by motorized vehicles. The reason is protection of the soil, water, and vegetation resources and to control the proliferation of user-created roads and trails.

12 - Rationale the Forest Service cited in closing the Leon Sinks to ORVs [off-road vehicles] holds true for closing the trails alongside my sinkhole and the floodplain of Black Creek.

Response: One intent of the urban interface management area is to restrict bicycles and motorized vehicles to open, numbered roads and designated trails; although most of the sinks and underground caves fall in this area, Black Creek and its floodplain do not.

24 - Confine uses that are now spreadout over the entire forest into a small area, adverse impacts to the area may result.

Response: We agree, and we do not intend to confine use to a small area. We do plan on confining use to existing roads, trails, firebreaks, woods roads, and unmarked travelways.

24 - Mechanical rehabilitation will be needed on trails that will get extensive use.

Response: Rehabilitation and reconstruction of trails is a necessary part of operation and maintenance. Partnerships with user groups will provide the means to accomplish much of this work.

24 - Support the current access policy, oppose the proposed access plan.

Response: Thank you for your comment. However, after more discussion and review of public comments the Interdisciplinary (ID) Team decided to continue with the proposed access plan.

25 - Limit the areas in which ATVs [all-terrain vehicles] are permitted and that these areas be carefully selected to minimize damage.

Response: While our focus is not on limiting the use of ATVs or confining them to specific areas, we do intend to keep them on open, numbered roads, designated trails, or unmarked travelways and prevent cross-country travel.

32, 35, 38, 44-53 - Against any new restrictions.

Response: We are aware that the change to prohibiting cross-country traffic will not meet with everyone's approval, we feel it is in the best interests of the forest resources to move to this policy. See Record of Decision (ROD) for rationale for the selected alternative.

33 - Plan, pages 3-2 & 3-3: Can not support Access Interim Standards AC-3, AC-4 & AC-5 as it denies access to bicycles.

Response: Access Standards AC-3, AC-4, and AC-5 (AC-1 and AC-2 in final Forest Plan) do not deny access to bicycles. They do prohibit them from going cross-country and creating new trails. Bicycles will still be able to use open, numbered roads, designated trails, firebreaks, and unmarked travelways, depending on where they are on the forest.

33 - Plan, page 3-2: Bicycling should be included in Access Interim Standard AC-1 as a regulated use.

Response: Access Standard AC-1 applies to those types of users that may travel cross-country, and bicycles are not allowed to do this in the proposed policy.

33 - Plan, page 3-2: Bicycles are usually ill-equipped to move cross-country.

Response: Cross-country travel is not conducive to most bicycling experiences. The physical resource needs of bicyclists entail a preexisting road, trail, track, or path to follow.

33 - It is important for bicyclists to have full access to a wide variety of trail opportunities now and in the future.

Response: We agree. We expect that the 2-year access process will result in a variety of trail settings and experiences for all levels of bicycling.

39 - More riding areas means riders are more spread out, which makes it safer, but keeps popular areas from being overused.

Response: We agree. It is not our intention that popular areas get overused. There are miles of open, numbered roads, designated trails, and unmarked travelways throughout the forest which will spread the use out.

40 - Object to any plan which would call for a general restriction or ban of off road vehicles.

Response: The Forest Plan does not intend to ban off-road vehicles, but it does prohibit them from going cross-country. However, there will be miles of open, numbered roads, designated trails, and unmarked travelways to explore.

42 - Motorcycling is a different form of OHV use and should be looked at differently.

Response: The specific needs and desires of motorcyclists are different from other users. The Forest Plan does not make specific decisions about where and what type of trails should be provided for specific uses. However, it is important that motorcycle users be part of the 2-year public involvement process to identify the type of trails they need and the settings where they want their recreation experiences.

43 - Don't minimize access to the rest of the forest because there is an over abundance of usage, north of Bloxham cutoff.

Response: We feel access will not be minimized in the rest of the Apalachicola NF. Miles of open, numbered roads, designated trails, and unmarked travelways exist for this use.

54-60, 76-79 - Reconsider position on any new restrictions on OHV use in the national forests or recreational areas of Florida.

Response: After the comment period, the ID Team reviewed the comments and discussed the access issue again. We decided to stay with the proposed access policy in the Forest Plan.

60 - Closure of any areas can be avoided by proper management and maintenance after use by the user groups.

Response: This statement would be accurate if the only use was by organized user groups. These organized groups, often partners with us in maintenance, do an excellent job of educating their members on proper use and etiquette. However, the national forests are open to the public and we get a variety of users, many of whom disregard low-impact techniques. This increases management problems and sometimes results in closure of areas.

65 - The final plan should recognize motorized recreation as a legitimate activity within our NFs.

Response: The Forest Plan and Final Environmental Impact Statement (FEIS) include motorized recreation as a viable and appropriate use of the national forests.

65 - The current proposed language provides the ammunition to those ``anti-motorized'' groups who want to keep folks out of the forest.

Response: We try to be as precise with our language as possible to prevent differing interpretations. We do not intend to keep visitors out of the forest but to provide for the protection of resources while allowing a variety of uses. We felt the language prohibiting cross-country traffic was clear and precise. See Record of Decision for rationale for the selected alternative.

66 - Support a trail system of at least 65 miles or more designated for ORV use.

Response: The Forest Plan does not make specific decisions such as how many miles of trails to provide. This will be determined during the 2-year public involvement process, and your suggestions will be carried over to the working groups.

66 - Encourage the development of a loop system, each loop should be no more than 20 to 25 miles in length.

Response: The Forest Plan does not make specific decisions such as how trails should be laid out. During the 2-year public involvement process, user groups will help determine how many, where, and what types of trails should be designated. Loop trails are highly desirable.

73 - Concerned about the destructive effect in the forest of the ORVs and they should be very limited and controlled.

Response: Thank you for your comment. The destructive effects of ORVs, as with any type of use, can be limited or mitigated by well-designed trails or restricting that use to areas of the forest that can support that use without unacceptable effects.

74 - Dirt bike riders are very concerned about the lack of areas in which to ride.

Response: Very few of our users commented on the lack of riding areas on the forest. They did stress that the national forests are almost the only places where motorized recreation can occur, and that this use should continue. We intend for it to continue.

75 - Concerned that two wheeled ORVs are grouped with all other vehicles.

Response: The ID Team did consider dealing with each type of motorized use separately but decided to keep the Forest Plan in general terms.

80 - Horses and pedestrians could be allowed in unmarked areas.

Response: Horses and hikers have access to trails as well as roads and unmarked travelways. In addition, they are permitted to travel cross-country.

80 - Any motorized vehicle should remain on appropriately marked roads and trails.

Response: By prohibiting cross-country travel, motorized vehicles will have to stay on open, numbered roads, designated trails, and unmarked travelways.

82 - There should be equal access to all groups, including motorized and non-motorized vehicles, horse back riders, hunters, hikers, and bicyclists.

Response: We agree. Thank you for your comment.

82-83 - The area I am concerned with is bordered by CR [county road] 42 on the south, FR [forest road] 538 on the east, FR 572 on the west and CR 445 on the north; has hundreds of miles of trails; under the new plan to continue to use these trails, they will have to be designated as trails; does this particular area need this restrictive designation and can this area be removed from this designation.

Response: The Paisley Woods area is a longleaf/slash pine flatwoods ecosystem where the soils are more sensitive than the sandy ones in the sand pine and scrub. In addition, this is a popular area for hikers, bicycle riders, horseback riders, and off-road enthusiasts. Restricting bicycles and vehicles to open, numbered roads and designated trails will not only protect the resources but reduce conflicts between users.

83 - The forest can continue to be used for all types of recreational activities, both non-motorized and motorized.

Response: Thank you for your comments. They are important to us, and we are glad that users like yourself accept and respect other types of recreational use.

83 - The forest must be preserved for the future, this can be done without locking out any of the people who enjoy the forest.

Response: The intent of the Forest Plan is to ensure the forest and the goods, services, and benefits it provides are sustained for future generations.

85 - Encourage the continued use of traditional motorcycle and ATV trails throughout and where existing trails should be maintained in an open status including the continued use of firebreaks.

Response: Thank you for your comment. We expect to continue to provide traditional motorized trails in the future as well as continued use of the open, numbered roads, designated trails, and unmarked travelways in large portions of the forest.

87 - The issue of shared-use trails is a state of change and should be addressed on a specific basis, not mandated either way in the plan.

Response: We agree; and the Forest Plan does not make specific, project-level decisions such as where and what type of trails should be put in.

91 - Add a policy which states, ``Identify and recommend means and funds to: (1) stop illegal off-road use of motor vehicles in NFs, (2) increase enforcement, and (3) repair resultant damage to ecosystems."

Response: We agree with those goals, which are administrative decisions and can be implemented without specific direction in the Forest Plan. We feel the policies in the Forest Plan address ways to help achieve those goals.

91 - Motorcycle and motorized vehicle racing must not be allowed in NFs in FL. Racing is not a sound multiple use. In actuality, it eliminates multiple use.

Response: Motorized recreation is a legitimate and appropriate form of recreation on the national forests. Well-managed and well-designed Enduros also are appropriate.

91 - Racing grounds are something which can be provided by the private sector at a profit. They should not be provided by a government agency which manages and protects natural resources.

Response: We agree. Race tracks are best provided by the private sector.

99 - Clay pits on roads #573, 588, 566, and others have been fenced off for public use, would like to have access again. Solutions for access: 1) leave fence, post a sign at the gate ``enter at own risk," 2) at ranger office, have disclaimer form to be signed by applicant, and charge an annual fee, and 3) have ranger spot check pit areas and issue permits for fees.

Response: Liability issues prohibit us from allowing use on these borrow pits under any circumstances.

99 - Limiting areas to ride in the forest appears to becoming more and more prevalent.

Response: As populations increase, the number of forest users will increase and this alone will put more pressure on the ecosystem. Restricting use to open, numbered roads, designated trails, and unmarked travelways will prevent the proliferation of user-created trails and protect the forest resources so that future generations can experience what we enjoy today.

105 - Concern for off-road motorcycle use in the Ocala NF, and cannot understand why other users have larger areas to use.

Response: Different uses have different needs; horses cover more area during an outing than hikers, and motorcycles cover more ground that horses. We must balance all these needs while protecting the resource and yet still provide a variety of settings and experiences for each type of use. With so many different uses, some change is inevitable, but motorized use will still be available on the national forests.

109 - In Alternative E permission for motorized vehicles to travel on unmarked trailways is noted as ``difficult to enforce." Why then does it appear on the ``preferred alternative" plan?

Response: Simply because something is difficult to enforce is not a good reason to discard it. If the end result is better protection of the resource, then we must choose that course and find the means to achieve it.

109 - Motorized travel should be denied on unmarked travelways if only to facilitate enforcement.

Response: Denying access to unmarked travelways would tend to make enforcement more difficult, not facilitate it. It would be difficult to post, gate, or put barrier posts on the numerous unmarked travelways on all the forests.

109 - The elimination and/or limitation of access roads in the plan is to be commended.

Response: Thank you for your comment. As you know, the intent of the Forest Plan is not to eliminate roads. It is to control unacceptable impacts to the resources, and restricting motorized vehicles in some areas is one way to accomplish that.

112 - Fearful of the lockout of motorized recreation in the State of Florida and all other states as well.

Response: It is not our intent to ``lock out" any users of the forests but to ensure that their use does not cause unacceptable damage to resources. It is true that Federal lands are some of the only places for motorized recreation, and this appropriate use will continue on the national forest.

113 - Please consider enhancing the descriptions of MAs [management areas] to include motorized recreation access needs.

Response: Motorized recreation is included in the descriptions of management areas where that use is allowed, as well as in the standards.

114 - Concerned that the verbiage in the proposed revision does not identify and protect existing and historically used off-highway motorcycle trails and unmarked travelways.

Response: Motorized use on the existing and historically used trails and unmarked travelways will continue; it is the cross-country travel that is being prohibited. In some of the more sensitive areas of the forest, motorized use will be restricted to open, numbered roads and designated trails. These trails will be identified and designated during the 2-year public involvement process.

114 - Since the proposed plan does not recognize these existing motorized trails and unmarked trailways, will they automatically be ``unapproved"?

Response: No, they are not automatically ``unapproved" or ``closed." During the 2-year public involvement process, users will help us decide which of these existing trails and unmarked travelways should be designated as motorized trails.

117 - We would encourage you to insure OHV recreation with specifically worded items instead of generalize terms if necessary.

Response: The Forest Plan provides general management directions; and specific implementation strategies will be developed during the 2-year phase-in period for the access policy.

122 - It should be stated that riding should be allowed on existing trails and trailways or firebreaks.

Response: We feel the proposed access policy states this. Trailways and firebreaks are considered unmarked travelways.

125 - We can work together to protect the forest. I belong to the Florida Trail Riders and we are ready and able to work with you.

Response: Thank you for your comment and your offer. One of our forest goals is to increase partnerships with our user groups, and we can certainly use the Florida Trail Riders in trail identification and marking.

126 - The proposed language does not adequately address the needs of off-highway motorized enthusiasts.

Response: The Forest Plan attempts to address the needs of motorized recreation users while at the same time protecting the soil, water, and vegetation resources. We are providing for this use through miles of open, numbered roads, designated trails, and unmarked travelways.

127 - Permits and no riding signs posted in environmentally sensitive areas, such as sink holes and marshlands, combined with substantial fines for riding in these areas should solve the problem [environmental damage], as well as provide much needed revenue for the US Forest Service.

Response: We received many similar suggestions, and these will be carried over into the 2-year public involvement process where these specific details will be discussed.

127 - Your problem does not lie with the motorcyclist, but with the 4X4 motor vehicles, motorized dune buggies, and yes certain uneducated recreational users of three wheel and four wheel all terrain vehicles.

Response: It is true that some uses cause more impacts than others. Our intent is to keep the uses on the open, numbered roads, designated trails, or unmarked travelways that are able to support that use with causing unacceptable damage.

127 - I am appalled at this behavior, and am in full support of its termination, but please do not lump the motorcyclist and myself in with these people who insist on destroying the rights of everyone.

Response: Part of our mission is to educate these users about proper use and respect of the land. Organized groups and users like yourself, who practice the ``tread lightly'' philosophy, can help us change the behavior of destructive users.

128, 130, 134-137, 164-165 - Concerned about the potential loss of access to all districts of the forests in FL for riding purposes.

Response: The above comment express concern that they will not have access to all areas of the forest. We would like to reemphasize that bicycles and motorized vehicles will still have access to all areas of the forest that they currently do. However, in portions of the forest that are sensitive to overuse, that access must be restricted to open, numbered roads and designated trails.

129 - It is imperative that these policies do not restrict use and ask support in limiting the wording changes of the current plan.

Response: It is not our intent to limit off-road motorized traffic. We believe it is an appropriate use of the national forest. In some of the more sensitive areas of the forest, bicycles and motorized vehicles would be restricted. The prohibition on cross-country travel will curtail the amount of user-created roads and trails and prevent resource damage.

130, 134, 136, 164, 239-252, 309, 312, 268, 274, 278, 281-284 - Management Area descriptions do not adequately address motorized recreation access.

Response: Motorized recreation is included in the descriptions of management areas, as well as in the standards, where that use is allowed.

131 - If adopted [proposed access policy], it will undoubtedly put us in a position of having no ``approved'' trails.

Response: Motorcyclists will still be able to use the many miles of open, numbered roads, designated trails, and unmarked travelways in large areas of the forest. In addition, after the 2-year access process, motorized trails will be designated.

132 - The language in the proposed plan would severely limit our access to the forest.

Response: We feel prohibiting cross-country travel will not severely limit access to the forest. There are hundreds of miles of open, numbered roads, designated trails, and unmarked travelways currently being used and will continue to be used.

139 - The new proposed Plan does not recognize existing unmarked motorized trails, this would essentially lock all ORVs out of the woods.
Response: We do recognize the many miles of existing unmarked trails and travelways are used for motorized recreation and would like for this use to continue on those open, numbered roads, designated trails, and unmarked travelways instead of cross-country.

139 - The language of this proposal needs to be written to include existing trails and fire roads until a system of marked trails can be developed.

Response: We felt it was not necessary to specifically state that these roads, trails, and firebreaks can continue to be used until designated.

140 - Concerned that under the current proposals, hundreds of miles of unmarked trails would be closed.

Response: Your concern is noted. In large areas of the forests, open, numbered roads, designated trails, and unmarked travelways will still be open to bicycles and motorized travel. In other areas, some of the unmarked travelways may become designated trails for this use.

141 - Allow reasonable, controlled access to Wildlife Management Areas.

Response: The Forest Plan allows for access to these areas using open, numbered roads, designated trails, and unmarked travelways.

143, 144 - Access to unmarked trails currently used should continue, and the wording ``you can ride OHVs on forest trails except where specifically prohibited'' should be included in the new plan.

Response: Thank you for your comment. Access to unmarked trails currently used will continue in large areas of the forests.

145 - Alternative E envisions the Forest Service designing and building trails in partnership with organizations representing the interests and needs of cyclists and ORV users.

Response: Thank you for your comments. We look forward to creating partnerships with users from Gadsden County.

153 - Endangered species and environmentally sensitive communities are of great concern and I support buffers and exclusions to these areas.

Response: Thank you for your comment on efforts to protect endangered species. Off-road enthusiasts such as yourself will continue to enjoy the miles of open, numbered roads, designated trails, and unmarked travelways on the forests.

157 - One of the most important steps the NFF can take to protect a large group of special species is to ban motorized vehicles from all wetlands, ponds, lakes, pond-margins and small isolated water bodies, and to enforce this closure vigorously.

Response: We agree. Many of these areas are protected through management area designations and by restricting bicycles and motorized vehicles to open, numbered roads and designated trails.

157 - We would all like to see off-road travel greatly restricted. If a trial period shows this effort to be ineffective, perhaps the closure plan should be refocused on selected critical areas at first. Requiring off-road motorcycles to be fully muffled would also eliminate much of the friction between these forest users and others.

Response: We feel prohibiting cross-country travel and restricting vehicles to open, numbered roads, designated trails, and unmarked travelways will protect the resource. If our yearly monitoring shows otherwise, we will need to look at other alternatives.

165 - If the plan proposes to change the current ``you can ride anywhere . . ." to ``you cannot ride anywhere . . ." it will leave no ``approved" trails to ride on.

Response: While the current ``open unless posted close" policy allows the user the greatest amount of freedom, it does nothing to prevent the continued creation of new roads and trails by users who choose to travel cross-country. Riders can still use open, numbered roads, designated trails (granted, these will need to be identified in the 2-year access process), and unmarked travelways, depending on where they are in the forest.

167 - In favor of any revision that limits or further restricts off-road, motorized vehicles in even existing trails in Florida's National Forests.

Response: Thank you for your comment. As you know, the intent of the Forest Plan is not to limit or restrict motorized use per se, but to protect resources from unacceptable impacts due to unrestricted use.

169 - Currently vehicles can enter the forest along SR-375 at many trails or unmarked roads; this hosts a myriad of illegal activities such as dumping garbage, marijuana growing and unsafe conditions during hunting season.

Response: The area of restricted access has been enlarged to include areas along SR-375.

169 - Alternative E would bring much needed relief, consideration should be given to expanding the ``Urban Interface" area to include SR-375 (Smith Creek Rd).

Response: The area has been expanded.

172 - Request that the proposed revised land and resource management plan not infringe upon the activities my family and I have enjoyed all these years.

Response: It is not our intent to infringe or curtail your use of the forest. We feel motorized use is an appropriate activity on national forests, but we need to balance protection of the resources with recreational use before use increases to a level where the impacts are unacceptable.

194 - Concerned about the realistic opportunity to implement the approved bicycle trails in the next two years.

Response: We believe the 2-year public involvement process will achieve the goal of identifying needs of the users and developing an adequate trail system for all users.

195 - All off-road traffic should be prohibited and the rules backed up with adequate law enforcement.

Response: Off-road motorized recreation is an appropriate use and will continue on the national forests. Our efforts will be concentrated on where and how that use should occur in order to protect the resources.

197 - Consider implementing a ``sticker program" to collect fees for trail improvement and rider education.

Response: We received many similar suggestions, and these will be carried over into the 2-year public involvement process where these specific details will be discussed.

197 - Suggest that any area eligible for logging or clearcutting should be open to use by ORVs weighing under 1000 pounds.

Response: This is an intriguing suggestion and will be carried over to the discussions in the 2-year access process when off-highway vehicle trails will be developed.

197 - The proposed plan would limit motorized vehicle use in the paisley area and the Lake Delancy area to designated trails only. This would concentrate all the ORV use into one thin corridor and this corridor, and this would cause the trail to become rough from concentrated use.

Response: The Paisley Woods area is a longleaf/slash pine flatwoods ecosystem where the soils are more sensitive than the sandy ones of the sand pine scrub. We are confident that an adequate system of trails in and adjacent to Paisley Woods can be developed.

197 - Delay implementation of the access plan currently proposed until significant number of ORV trails can be designated.

Response: We understand your concern, but motorized use can continue on existing designated trails, open, numbered roads, and unmarked travelways while the 2-year process of identifying and designating trails is under way.

202 - Closing parts of the forest for different activities. Some closures will probably be a necessity. The managers will need to decide if the reason is to control land owner access or protect the Tree Farm.

Response: Some parts of the forest are currently closed to some activities. The Revised Forest Plan seeks to protect soil, water, and vegetation resources by keeping bicycle and motorized traffic on open, numbered roads, designated trails, and unmarked travelways.

203 - Historically used and existing off-highway and ATV trails both marked and unmarked should be included in the unmarked travelway designation.

Response: Most of these existing off-highway and ATV trails are not system roads but unmarked travelways and will continue to be called such, unless they are in those areas of the forest where motorized vehicles are restricted to open, numbered roads and designated trails. In those areas, some of those unmarked travelways may become designated trails if it is determined during the course of the 2-year public involvement process that designated trails are needed there.

206 - The forest is no place for motorcycles off-road or otherwise.

Response: We would have to disagree with this statement. Motorized recreation is an appropriate and acceptable activity on national forest land. Two Executive Orders signed by the President, as well as a letter from the Chief of the Forest Service, direct us to provide for motorized recreation.

206 - Un-numbered and un-needed roads should be closed.

Response: The prohibition on cross-country travel should prevent the proliferation of user-created roads and trails. The hundreds of unmarked travelways that now exist will continue to provide access to the forest. In some portions of the forest, use will be on open, numbered roads and designated trails only, and this will begin to eliminate some of the unmarked travelways as nature reclaims them.

208 - Need to keep motorized bikes on especially established and marked bikeways.

Response: The intent of the Forest Plan is to prohibit cross-country travel by bicycles and motorized vehicles to protect the resource and prevent more user-created trails and roads. Motorized bikes may use designated trails for their use, open, numbered roads, and, in many areas, unmarked travelways.

208 - Need to close some of the roads and pathways in the Apalachicola NF to protect wilderness areas.

Response: By law, motorized and mechanical equipment is prohibited in wilderness areas. Some old roads are slowly becoming muted by the forces of nature. Blazed trails exists, and hikers, horses, and hunters on foot keep these visible.

210 - The policy proposed in the Florida LRMP [Land and Resource Management Plan] takes a giant step away from a presumption of open access and towards a national park-like presumption of closed access. This major policy shift demands a thorough analysis of the record and discussion in the Florida LRMP regarding the reasons for such a change.

Response: The FEIS contains a discussion of the negative and positive effects of an ``open versus closed'' policy. As population pressures increase, more national forests find themselves facing increasing recreation impacts. The ``open unless posted closed'' policy does not work as well as it did in previous years simply because of increased use.

210 - The interim policy for the Urban Interface Management Area will cause immediate problems.
Response: Every proposed change has potential for problems and benefits; we expect them both and feel the future benefits will outweigh the problems we might experience during the transition period.

210 - The LRMP gives no reason for isolating the urban interface area for special access treatment.

Response: The description of the urban interface management area adequately addresses the desired future condition (DFC) of access for the area. Analysis of the alternatives and their effects is included in the FEIS.

211 - Once adopted the new plan will leave the thousands of off-road motorcyclists with no approved trails.

Response: Motorcyclists will still be able to use the many miles of open, numbered roads and unmarked travelways in large areas of the forest. In addition, after the 2-year access process, motorized-use trails will be designated.

215 - Very disappointed that the LRMP proposes interim access standards rather than immediately proposing a designated system of roads forest wide for the forests.

Response: We feel it would be unfair to immediate proposed a system of designated trails without spending the time and energy to get user groups involved in the identification and designation of these trails.

216 - Plan, page 2-5. FWO [forestwide objective] 13: Immediately stop all ORV traffic, AND ENFORCE IT. This applies especially to off-road traffic in wetlands.

Response: Off-road motorized recreation is an appropriate use of the national forests and will continue. Our efforts will be concentrated on where and how that use should occur in order to protect the resources.

216 - Plan, page 3-2, AIS 1: Urge the adoption of a much stronger statement in the final plan; ``All off-road vehicular traffic (bicycles and motorized vehicles) is prohibited. Vehicles will remain on an open, numbered road, designated trail, or designated area. This policy will be strictly enforced.'' Urge the Forest Service to implement this policy immediately and not wait for two more years.

Response: It is not our intent to prohibit all off-road motorized traffic. We believe it is an appropriate use of national forests. In some of the more sensitive areas of the forests, bicycles and motorized vehicles are restricted as you suggest. The prohibition on cross-country travel will curtail the amount of user-created roads and trails and prevent resource damage.

219 - Plan, pages 2-3 & 2-4: Disagree with that portion of goal 14 that provides for some types of motorized trail users.

Response: Off-road motorized recreation is an appropriate use of national forests and will continue. Our efforts will be concentrated on where and how that use should occur in order to protect the resources.

219 - DEIS, page 3-101: Urge that cross-country travel be prohibited as explained in Alternative B.

Response: Thank you for your comment. The preferred alternative prohibits cross-country travel by bicycles and motorized vehicles and is similar to Alternative B.

219 - Plan, page 2-4, Goal 14: Believe OHVs should be allowed full use of only those roads that are open to all vehicle traffic.

Response: Thank you for your comment. However, we feel that besides roads, motorized use can occur on trails designed and designated for that purpose without causing damage to the resources.

219 - Plan, pages 2-4 to 2-6: Oppose any special trails for OHVs. If objective 13 includes special trails or other provisions for OHVs, we register our objection.
Response: Thank you for your comment. However, we feel it is appropriate to provide designated trails for motorized use that will offer these users a variety of settings and experiences.

219 - Plan, pages 2-4 to 2-6: The interim standards on access are acceptable for now, but urge that they be more realistic and responsible when the ``system of trails" is developed during the next two years. Urge careful consideration of only those uses compatible with natural resources in a natural setting. Tractor pull sites, race tracks and special OHV trails should be excluded.

Response: We hope that all user groups will be represented during the 2-year public involvement process to identify user needs and designate a system of trails. While we agree that tractor pulls and races are not appropriate activities on national forest lands, OHV trails and Enduros are appropriate, provided they are managed to prevent damage to the resources.

227 - Standard AC-2: This should state that bicycles and motorized must stay on open, numbered roads and designated trails. Standard AC-3: Category three should be eliminated.

Response: In large portions of the forest, bicycles and motorized vehicles can use unmarked travelways without causing damage to the resource. Yearly monitoring will indicate if any damage is occurring.

227, 229 - Standard AC-1: This should be revised to state: ``Horses should stay on open, numbered roads and trails designated for their use."

Response: The ID Team discussed this subject again but decided to allow horses to be permitted cross-country. Their impact on soils and vegetation while going cross-country does not create as visible a path or trail as do bicycles or motorized vehicles.

227, 229 - Request that the Access Interim Standards AC-1 to AC-9 be amended to limit all motorized ORV use to open system roads and trails. Request development and inclusion of specific standards and guidelines that address strict enforcement of this restriction.

Response: There are many miles of existing unmarked trails and travelways used for motorized recreation in areas of the forest that can support that type of use, and we would like for that use to continue.

227, 229 - There should be an additional forestwide objective to strictly enforce this policy.

Response: The prohibition of cross-country travel by bicycles and motorized vehicles will become effective when the final Forest Plan is approved. This will keep these users to open, numbered roads, designated trails, and unmarked travelways. Most wetlands are in desired future conditions that restrict motorized use to designated trails and open, numbered roads. Enforcement will remain within our current budget and personnel constraints.

227, 229 - Request that the final plan restrict or prohibit motorized ORV use until such time as the adverse impacts can be documented and eliminated.

Response: We feel that it would be unfair to prohibit off-highway vehicle use during the 2-year public involvement process to determine a system of trails. In some areas, bicycles and motorized vehicles will be restricted to open, numbered roads and designated trails.

227, 229 - It is unacceptable for this proposed Plan to ignore these requirements and to simply adopt as a FWO another two year delay AFTER THE FINAL PLAN IS ADOPTED to develop a plan for ORV use.

Response: We felt it would be unfair to develop a system of trails without in-depth cooperation from all user groups.

227, 229 - FWO 13: This objective is totally unacceptable, and in direct violation of Forest Service regulations. Forest Service planning regulations at 33 CFR section 219.13 states ``[t]he MINIMUM requirements for integrating individual forest resource planning into the forest plan are established in [sections] 219.14 through 219.26 of this subpart."
Response: The Forest Plan is not intended to designate specific locations of trails and roads. The Forest Plan provides for areas where certain uses will be prohibited or restricted.

227, 229 - The continuation of motorized ORV use on the NFs in FL directly conflicts with and abrogates the DFC described on page 2-2: ``[f]orests provide a refuge and tranquil retreat from the fast pace city life. Evidence of human activities exists in most of the forests, although most activities remain subordinate to the characteristic landscape." Motorized ORV use in the NFs in FL is incompatible with this DFC and urge that be prohibited.

Response: Motorized recreation is an appropriate use of national forest lands. The management areas provide a range of motorized and nonmotorized settings so that all users have the opportunity to enjoy the forests.

227, 229 - The Forest Service should identify on this map the roads, trails and unmarked travelways which are scheduled to be closed, if this is actually likely to occur. An addendum to the map should identify the initial date on which each road was first scheduled to be closed, the number of miles of roads scheduled to be closed on each National Forest within a stated time frame, the number of miles of roads not scheduled to be closed, the estimated number of miles on each National Forest of unmarked travelways and the number of miles on each National Forest of designated trails.

Response: Because of the number of unmarked travelways and nonsystem roads, it was not possible to complete an inventory during the Forest Plan revision. This inventory, and maps, will occur during the 2-year public involvement process to develop a trails system. Information on roads to be closed will be included in the process.

227, 229 - Plan, page 4-13, MA 0.4, DFC: If motorized vehicles affect future designation as a wilderness area, they should be disallowed.

Response: Only in designated wilderness areas are motorized vehicles prohibited by law. A wilderness study area (WSA) does not carry the same prohibition; motorized use can occur in these areas as long as the areas are managed to preserve their wilderness character.

227, 229 - Plan, page 4-14, Standard 0.4-2: Allows motorized equipment on unmarked travelway. STRONGLY OPPOSE this.

Response: Since motorized use is not prohibited by law in wilderness study areas, the Forest Plan states that they are allowed to be on open, numbered roads and unmarked travelways that already exist in the area.

227, 229 - Plan, page 5-5, Goal 14: Photo points are good, what is criteria for selecting?

Response: There is no set criteria for selecting photo points. They are chosen for their ability to capture an image of the resource being monitored.

230 - The FS should develop a baseline map for each NF showing numbered roads, designated trails, and unmarked travelways. A detailed plan for road closures and restoration should follow, and include a plan to designating multi-use trails, and to close roads and travelways.

Response: These are some of the goals that will be accomplished by the 2-year public involvement process to identify user needs and develop a trail system.

230 - Keep motorized trails and recreation areas at the periphery of the national forests and along existing human corridors like I-10 in the Osceola and east and west ends of SR 40.

Response: Motorized recreation experiences require a variety of settings, including semiprimitive motorized ones. The forests provide that variety by permitting use of trails and unmarked travelways in many areas of the forests, not just along corridors of human influence.

230 - AC-1-9: Forest access to the Apalachicola, Ocala and Osceola should limit motorized vehicles to numbered forest roads.
Response: Upon Plan approval, motorized vehicles can no longer travel cross-country. Motorized vehicles include passenger cars, pickup trucks, jeeps, ATVs and motorcycles. In order to provide a range of motorized recreational experiences, some motorized trails for designated vehicles are needed.

230 - Avoid creating new trails.

Response: Usually, new trails are designated and marked by using existing trails and travelways. New trail construction can occur where needed. The prohibition of cross-country travel will prevent the creation of new, undesigned trails by users going where they could destroy resources.

230 - Plan, page 4-36, Hardwood/Cypress Forest: Roads and motorized and nonmotorized access should be minimal.

Response: The management area description for this area states most roads are low standard and may be difficult to travel. Some higher-standard roads may exist.

231 - Language also needs to be clarified that AC-3-3 areas will be continued beyond the interim period, and that these are included within the definition of ``designated area'' in the description of the trail system included in the third sentence of the first paragraph following the heading ``Access Interim Standards.''

Response: One of the purposes of the 2-year access process will be to identify the areas where this use can occur. We have tried to clarify the language of the access policy in the final Forest Plan.

231, 236 - The proposed plan raises concern among responsible riders. It allows hikers and equestrians unrestricted access to all forest land, including cross country travel, yet places unreasonable restrictions on motorcycles and ATVs. It is obvious that your decision is one of political correctness or personal preferences - not scientific fact.

Response: The goal of access management is to allow the various uses to occur where the resource can support those uses without suffering unacceptable damage. In most of the forest, hiking and horse riding can occur without damaging soil, water, or vegetation resources.

232 - Motorized travel should be limited in the Forest Plan to numbered, officially recognized roads. A series of workshops should then be held as soon as possible to identify which roads should be closed and where additional roads are needed.

Response: Motorized vehicles include passenger cars, pickup trucks, jeeps, ATVs and motorcycles. In order to provide a range of motorized recreational experiences, some motorized trails for designated vehicles are needed.

233 - Allow no motorized vehicles off road. Eliminate the meaningless term ``unmarked travelway'' from Forest Service vocabulary.

Response: Motorized travel will need to stay on a open, numbered road, designated trail, or something that looks like a road or trail. We struggled with what to call all the old woods roads, pig trails, skid trails, dirt paths, two-rut roads, single track trails, double track trails, nonsystem roads, and game trails, since everyone called them something different. We created the term *unmarked travelway* and gave it a meaning (*see* Glossary).

233 - Allow no trail bikes off road.

Response: Upon Plan approval, motorized vehicles can no longer travel cross-country. In order to provide a range of motorized recreational experiences, some motorized trails are needed..

233 - The use of motorbikes and trail bikes should be allowed, but only on small, constantly supervised trackways on the edges of the forests. A fee for use would also be required here.

Response: Motorized recreation experiences require a variety of settings, including semiprimitive motorized ones. The forests provide that variety by permitting use of trails and unmarked travelways in many areas of the forests, not just along corridors of human influence. The Forest Plan does not make specific decisions such as setting fees.

236 - Have no problem with rules excluding motorized vehicle from Wilderness Areas, but I do object to interim restrictions in AC-3, AC-4, AC-7 and AC-8.

Response: These standards have been consolidated to AC-1 and AC-2 in final. We understand your concern about losing areas to ride in. However, motorized use can occur on the hundreds of existing miles of open, numbered roads and unmarked travelways in many areas of the forest, as well as motorized trails which will be designated after the 2-year public involvement process.

236 - The plan must recognize the existing network of trails, and it must provide a ``level playing field'' when the trails system is proposed and presented for adoption at the end of the interim period.

Response: It is our intent that all user groups will be represented as part of the ``working groups'' to identify and develop a trails system. The existing network of trails that users currently ride will become part of the designated system.

237 - Support rules excluding motorized vehicles from Wilderness Areas, but object to interim and permanent restrictions that motorcycles and ATVs must remain on designated trails when the proposed plan does not designate any trails or recognize the existing trails within these areas.

Response: During the 2-year interim period while trails are being identified and designated, use will continue except for cross-country travel. It would be unfair to exclude motorized use due to the fact that existing trails had not been designated.

253 - These long time existing motorized trails must be mentioned in the plan document as okay for continued & future usage in the interest of equitable multiple use.

Response: The existing network of roads, trails and unmarked travelways will be inventoried, and it is from these that the new system of trails will be drawn.

253 - Please insert language to acknowledge the existing trails and to agree to an interim period during which we as volunteers can help the Forest Service GPS [global positioning system] map & catalog these national resources. Prepared to donate time, equipment and software.

Response: Thank you for your comment and willingness to volunteer. It will take a combined effort of all user groups and the Forest Service to identify and designate a system of trails from this existing network of roads, trails, and unmarked travelways.

254 - There is no mention our OHV motorized trail anywhere in the plan & further state no new motorized or even off-road bicycle trails are to be created in the next 2 years. This is instantly doing away with

thousands of miles of long term use historical OHV motorized trails in the 3 forests in Florida by denying their existence while not leaving us any leeway to find & develop any to replace it.

Response: We currently have no designated OHV trail in our inventory, although some of our user groups have their favorite trails mapped out. The 2-year interim period will inventory the hundreds of miles of roads, trails, and travelways currently used, and users will help decide which ones will become designated motorized trails. During the interim, use will continue as is, but the end product will be an official system of designated trails.

254 - Please leave us adequate woods trail & the various connecting travelways such as two-track trails, skidder trails, fire-ditches, clear-cut perimeter trails etc. connecting these woods sections to continue our chosen form of recreation in the multiple-use scheme of forest management.

Response: These trails and the various connectors between them will become part of the system, providing a variety of forest settings for motorized recreation.

255 - Please acknowledge motorcycle and bicycle user group trails in the LRMP & include them for what they are, legitimate uses of long time existing & historically used travelways.
Response: We agree that bicycles and motorized vehicles are appropriate forms of recreation use on national forest land. The existing miles of roads, trails, and unmarked travelways will all be looked at to create a system of trails for all uses.

257 - Off road motorcycles is a legitimate use of public lands and must be included in the LRMP.

Response: We agree that motorized use is an appropriate use of national forest land, and the Forest Plan recognizes this. Motorized recreation use is permitted in a variety of the management areas.

268 - If the proposed plan is adopted, we will have no ``approved'' trails since the Forest Service has not designated unmarked trailways and existing motorized trails.

Response: During the 2-year interim period, use will continue as is until a system of trails is developed. It would be unfair to limit use to designated trails when these trails do not yet exist in some areas.

269 - Designation of all the existing trails within a 2 year period seems like quite a challenge considering the many trails that exist and are infrequently used. Clarification that existing trails would be retained and designated as trails is essential as well as a longer period to establish the trail system.

Response: Inventorying the existing road, trails, and unmarked travelways will be a monumental task, as well as developing a trail system from them. We are counting on committed volunteers to help us in this process.

271 - The current plan in existence ``you can ride anywhere except where it is specifically prohibited'' still works and provides for the most diversity of use for those who use and appreciate the forests.

Response: While the current ``open unless posted close'' policy allows the user the greatest amount of freedom, it does nothing to prevent the continued creation of new roads and trails by users who choose to travel cross-country. In a sense, this policy no longer ``works'' because it is causing unplanned and undesigned roads and trails and creating resource damage to soil, water, and vegetation.

272 - Vote NO to the new plan of no motorized trails.

Response: Thank you for your comment. Access to unmarked trails currently used will continue in large areas of the forest.

273 - The new Proposed Revised Land and Resource Management Plan will not allow current access to the hundreds of miles of trail that we now ride.

Response: During the 2-year interim period, use will continue as is until a system of trails is developed. It would be unfair to limit use to designated trails when these trails do not yet exist in some areas.

276 - If a trail, jeep road, unmarked travel ways, fire breaks, etc. are not designated for motorized use, they will be lost.

Response: In large areas of the forest, these roads, trails, firebreaks, and unmarked trails will still be available for riding. In other areas, a system of trails will be developed using these existing features, and they will not be lost if included in the trails system.

280 - Why hasn't the public been informed of the proposed changes and the effect they will have?

Response: A series of public workshops held in 1995, and again in 1997, helped us inform the public of proposed changes. In addition, our forest newsletter and newspaper articles around the state have kept people informed. The FEIS contains an analysis of the effects.

285 - Permitted events (Enduros) should be allowed to make new trails, this will help to keep the old trails from overuse.
Response: The eventual system of trails developed during the 2-year public involvement process should encompass enough trail miles to map out a system of trails that will support Enduro events for many years.

285 - The proposed forest management does not adequately provided for the continued use of the forest.

Response: We feel the proposed access policy does provide adequate access and is very much in line with the way our visitors currently use the forest. Members of organized user groups know how to responsibly use the forest; others create roads and trails by driving where ever they please.

286 - Don't think this plan adequately addresses motorized recreation.

Response: We understand your concern, but we are not closing down large areas of the forest to motorized recreation. It will continue to occur in those places where it was previously permitted, but restricted to open, numbered roads, designated trails, and unmarked travelways instead of cross-country.

306 - There are many existing trails and unmarked trailways. Please let us be able to continue to ride.

Response: During the 2-year interim period, use will continue as is until a system of trails is developed. It would be unfair to limit use to designated trails when these trails do not yet exist in some areas.

310 - Plan, page IV, Preface: It was noted that about 1,100 acres of Choctawhatchee NF have been transferred to the Forest Service. If there is included in this land a parcel large enough and suitable to be designated as an ORV area, such usage should be approved and could be developed and controlled by an appropriate local organization, e.g. motorcycle club, and be supported by user fees. This would be in accord with Forestwide Goals 2 and 3 and Objective 2.

Response: Most of the Choctawhatchee land is in small, scattered parcels that would not be suitable for motorized recreation use.

313 - Concerned about the privilege(s) to use the NFs for the recreational purposes as have been done for years.

Response: Recreation use that has been occurring on the national forests will continue. For protection of the resources, where that use occurs is determined through management areas and standards. No current uses have been prohibited by the Forest Plan.

314 - Concerned that many of the best riding areas are about to be taken away.

Response: We understand your concern and would like to reemphasize that bicycles and motorized vehicles will still have access to all areas of the forest that they currently do. However, in portions of the forest that are sensitive to overuse, that access must be restricted to open, numbered roads and designated trails.

315 - While not proposing the addition of any new trails in the NFs in FL; do feel that the use of existing trails and roads is consistent with and not detrimental to the proper use and physical well being of our national forests.

Response: We agree that the use of existing roads and trails is generally not detrimental, but there are areas where soils and vegetation are more sensitive to disturbance and impacts. Much of the detrimental impacts comes from cross-country travel creating unplanned and undesigned roads and trails.

315 - The limited amount of use that our forests receive from ORVs is certainly within the scope of legitimate recreational use and supported by the tax base of those active in off road motorcycling and its supporting industries.

Response: While we wouldn't characterize our off-highway vehicle use as ``limited,'' we agree that it is a legitimate and appropriate use of national forests; and it should continue.

316-326, 403 - The Forest Service is considering changes that might cause off road recreational riders to lose access to areas of our forests that we have used to now. This would be unfair to those thousands of off-highway vehicles that need the ability to enjoy the forests in their own way.

Response: Motorized use on the existing and historically used trails and unmarked travelways will continue; it is the cross-country travel that is being prohibited. In some of the more sensitive areas of the forest, motorized use will be restricted to open, numbered roads and designated trails. These trails will be identified and designated during the 2-year public involvement process.

316-326, 403 - I beseech you to consider the text of these rules carefully so as not to impart unfair restrictions on a large number of people.

Response: There are hundreds of miles of existing roads, trails, and unmarked travelways that will continue to be available for motorized recreation. We do not feel that requiring bicycles and motorized vehicles to stay on open, numbered roads and designated trails in some areas is unfair; it is necessary for protection of the resource.

327-350 - Do not want to see areas that are traditionally used left out of a new plan. Please give every consideration to all sections that already have trails on them.

Response: The existing network of roads, trails, and unmarked travelways will be inventoried, and it is from these that the new system of trails will be drawn.

351, 357-376 - There should not be restrictions of access to these trails and the wording should not be slick and calculated to do that. The present verbiage would seem to cover any adjustments to crisis quite adequately.

Response: In large areas of the forest, use will continue as it is now, with the exception of cross-country travel being prohibited. Firebreaks, jeep trails, and unmarked travelways will still be available; and in some areas, they may be designated as motorized trails. The wording of the access policy is not calculated to disguise any restrictions against motorized use; it is an attempt to describe what will take place during the 2-year public involvement process to develop the future trail system.

356-376 - Want to be able to use those trails already in use but not have to be restricted to ``marked'' or ``designated'' trails/pathways.

Response: In large areas of the forest, you will still be able to use open, numbered roads, designated trails, and unmarked travelways.

356-376 - Proposed changes to the existing rules would seem to be against ORV recreation.

Response: It is not our intent to prohibit or severely limit off-highway vehicle use. We want to restrict it to open, numbered roads and designated trails in some areas where the ecosystems are more sensitive to impacts.

377-402 - Desire to be able to access our forest areas without restrictions except perhaps as we have known in the past.

Response: We feel the proposed access policy will result in use continuing as it has in the past, with the exception of prohibiting cross-country travel by bicycles and motorized vehicles. In some of the more sensitive areas, this use will need to be restricted to open, numbered roads and designated trails to protect soil, water, and vegetation resources.

4 - Supports limiting motorcycle use.

11 - ORV guidelines are commendable.

15 - Strongly support severe restrictions on ATV access.

24 - Agree that some areas of the forest, wilderness study areas, wetlands, resource sensitive areas, etc., should be protected through prohibited access.

171 - Like the new restrictions on motorized vehicles, especially on the ATVs.

204 - We concur with these interim access standards.

205 - Supports cross country motorized travel being stop in alternative D.

210 - Are not opposed to restricted access in certain designated areas of the forest as long as there is a specific reason for it, such as environmental and safety concerns.

221 - Especially commendable are the closing of some roads and requiring motorized vehicles to stay on open numbered roads or on special trails.

Response: Thank you for your comment.

8 - Forest Service should issue a set number of annual permits to motorized vehicles in the form of a decal to be affixed to the vehicle.

127 - Believe that users of the NF should pay for pleasures and services that the US Forest Service provides us. I believe off road usage should be regulated by the purchase of permits and permitting should not be limited to off road vehicles, but should also include hunters, horseback riders, bicyclists, and campers. The revenue should then be used to police, maintain, improve, and manage the NF.

Response: We received many similar suggestions, and these will be carried over into the 2-year public involvement process where these specific details will be discussed.

9, 65, 113 - 100% of limits designation for the entire RCW [red-cockaded woodpecker] area is unnecessary, couldn't this be amended to a more reasonable exclusion distance, 1/8 mile?

85 - Support the establishment of 200 foot perimeters around RCW nesting sites in the northern half of the Ocala.

112 - Woodpeckers and scrub jays do not need more than 150 feet around a nest to survive, exclusion from these area are not necessary.

130, 132, 136 - The RCW and Scrub Jay MAs should not be 100% off limits, a reasonable exclusion distance of 200 feet around each active nest is acceptable.

134, 141, 149, 164, 231 - The RCW and Scrub Jay MAs should not be entirely off limits, a reasonable distance around each active nest is acceptable.

189, 190, 239-252 - A reasonable exclusion distance (200') from an active, RCW nest is appropriate, whereas exclusion from the entire area is not.

253 - The restrictions as they apply to distance away from RCW sites & scrub jay sites are much more stringent than they need to be for continued acceptable levels of increase in both species.

254 - There are unrealistic restrictions in management plans/policies regarding RCW management areas & scrub jay management areas. A 200' buffer around a RCW nest is reasonable.

268-313 - Areas that need to be specifically managed need to be 100% off limits to motorcycles. RCW and scrub jay management areas may have a reasonable exclusion distance but not total exclusion from the entire area.

314 - Understand closing off an area in close proximity to an active nest, but see no reason to close off an entire tract of land because of these birds.

316-326, 403 - If there is a need to avoid a burrow, den or nest, it could be marked locally. Why should people be excluded from the entire region?

327-350 - See no need to restrict riding in general areas where wildlife live. Mark these at a reasonable distance and not declare a whole forest off limits.

356-376 - Not against preservation of nesting areas but people do not need to be excluded from the entire region.

377-402 - Would respect any localized ``protection" of wildlife homes. A marked restrictive area of a couple of hundred yards for instance. Don't wish to see whole sections off limits because of one or two nests for example.

Response: *Record of Decision, Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* (RCW EIS) states that the development of any new areas such as log decks, off-road vehicle trails, trailheads, and campsites is prohibited within RCW clusters and replacement and recruitment stands. This regional standard is incorporated by reference in the Forest Plan. However, it refers to new development. Existing trails and unmarked travelways will not be off-limits to motorized use. It is not our intent to make these areas 100 percent off-limits. As many commenters stated, it is important to protect endangered species, especially during nesting/breeding seasons, and the Forest Plan seeks to balance these uses.

18 - DO NOT support the proposal to stop or severely limit the use of vehicles on marked or unmarked roads with the NF.

269 - Concern that the new plan may excessively limit off-road vehicle access.

308 - Concerned that the proposed LRMP for the NFs in FL severely limits off-highway vehicle usage as it is currently written.

Response: It is not our intent to severely limit off-road motorized traffic. We believe it is an appropriate use of the national forest. In some of the more sensitive areas of the forest, bicycles and motorized vehicles are restricted. The prohibition on cross-country travel will curtail the amount of user-created roads and trails and prevent resource damage.

31 - The idea of only being allowed to use ORVs in a rather small, restricted area does not sound appealing.

31, 37 - If ORVs are only permitted in restricted areas, the areas might end up being over used and too crowded.

37 - The use of ORVs in a rather small, restricted area does not sound appealing.

213 - See a dangerous situation where motorcyclists are crammed into a very small area of the state while thousands of acres go unused except by very few people.

269 - Any plan adopted that substantially limits the areas motorized vehicles may travel will adversely impact Florida's off-road vehicle community and may lead to heavy usage in small areas resulting in adverse impacts.

286 - This plan puts too much restriction on land use by closing down too many areas and forcing all the use to a few designated roads or trails.

314 - Urge the Forest Service not to make the same mistake the other management plans throughout the country have made. That is continuing to close areas to off-road to us so that the concentration of riders in the few remaining open areas increases significantly enough to begin to have an impact on the area.

Response: We do not intend to limit motorized recreational use to a small area; we agree that this type of concentrated use results in severe impacts. Providing enough open, numbered roads, designated trails, and unmarked travelways throughout the forest will prevent impacts from overuse of a ``designated area."

42 - Object to the fact that the plan is going to designate the trails so strictly.

129 - Asking for support in maintaining access for motorcyclists to national forest land.

213 - Give serious thought to enlarging the time and areas available to off-road motorcyclists.

Response: We understand your concern, but we must consider the protection of the soil, water, and vegetation resources. There is a way to balance protection of the resources with recreational use, and that is to keep this use on existing open, numbered roads and designated trails in those sensitive areas.

65, 146, 148, 173-188, 278-309 - Protect continued access to all forest districts.

115, 116, 119, 260-268, 274 - Want to protect continued access to all districts of the forest.

126 - I respectably submit that the language of the proposal be ``less restrictive" and make available all land currently used and open to off-highway motorize use.

239-252, 259, 270 - Want to protect continued access to all districts of the forest.

Response: The above comments express concern that they will not have access to all areas of the forests. We would like to reemphasize that bicycles and motorized vehicles will still have access to all

areas of the forest that they currently do. However, in portions of the forest that are sensitive to overuse, that access must be restricted to open, numbered roads and designated trails.

74 - Motorcycles are much less destructive than 4 wheel drive trucks.

127 - The root of our problem: uneducated, destructive minded, drunken operators of 4X4 motor vehicles, motorized dune buggies, and ATVs.

169 - Concern about the use of altered trucks or four wheel drive vehicles, especially trucks used for the purpose of hunting can easily breach sensitive areas.

197 - Suggest that use limitations be based on weight; not based on emotions.

Response: All uses cause impacts. It's not so much the type of vehicle we're concerned with; it is the driver of the vehicle and the driver's respect for the land. Restricting vehicles to open, numbered roads, designated trails, and unmarked travelways, and prohibiting them from wetland areas will protect sensitive areas. Using the ``tread lightly'' philosophy, impacts from all vehicles can be minimized.

81 - I do consider it right to have access to the forest and ride motorcycles there.

82 - Concerned about the Forest Service taking away the privilege of motorcyclists to enjoy the nature of the forest.

112 - In order for our rights to be protected, we must have included in this proposal, verbiage that recognizes the existence of rights of way and include them as acceptable riding trails.

311, 327-350 - Please do NOT adopt any wording that would not allow citizens the right to access their lands for riding OHVs.

356-376 - No wording should bar people from using ``their'' lands.

Response: Every member of the public has a right to use the national forests, but that use must not damage the resources or infringe on other people's use of the forest. It is the job of the Forest Service to protect the forest resources, and that includes managing visitors and their use. Sometimes this can be done with signs, interpretive messages, or barriers; sometimes it requires restrictions, special designations, or closures.

89 - Recommend that the unofficial two rut roads along Hwy 375 be closed and that motorized vehicles be restricted to numbered roads and trails along that corridor.

94-97 - Those who own property near the Apalachicola NF are frequently exposed to incidents of trespass, indiscriminate discharge of firearms, illegal dumping, vandalism, marijuana cultivation and other inappropriate activities that are facilitated by access made possible from unofficial two rut roads within the forest, request motor vehicles be restricted to numbered roads and trails in the vicinity of private property along SR 20 and 375.

Response: Based on public comment, we have included the corridor between State Highway 375 and the Ochlockonee River as a part of the forest where bicycles and motorized vehicles must stay on open, numbered roads and designated trails. Monitoring during the next 10 years will indicate whether this will lessen the amount of illegal dumping that occurs in this area.

113, 133-137, 140-142, 147-149, 153, 164-165, 173-190, 130, 211, 212, 236-252, 259-303, 305, 309, 313, 351-354 - The proposed plan does not recognize or designate the existing trails that have been used for years.

117 - The current Plan as written does not recognize the existence of hundreds of miles of existing and historically used OHV trails and unmarked travelways.

377-402 - There should not be an ``Access Plan" that does not recognize the existence of UNmarked trails, roads, paths or travelways of sort and tries to ban any use of these thru verbiage that would allow closings of huge areas later.

Response: We do recognize the many miles of existing unmarked trails and travelways that are used for motorized recreation and would like for this use to continue on those open, numbered roads, designated trails, and unmarked travelways instead of cross-country.

116 - Please DO NOT change the rules leave it as written, ``you can ride any where except where it is specifically prohibited."

140 - Request that the plan be revised that the current policy of being allowed to ride anywhere in the forest that is not specifically prohibited be continued.

146 - Ask that the original language be maintained as it has for many years.

170 - The current ``you can ride anywhere except where it is specifically prohibited" policy should NOT be changed.

203 - The forest should be open for OHV use except where specifically closed.

283 - The plan intends to radically change access to the forests from one of ``you can go anywhere, except indicated restricted areas" to one of ``you can only go in designated areas" for one purpose: to make enforcement and policing access easier for the rangers.

308 - Maintain the current policy of allowing motorized vehicle use anywhere except where it is specifically prohibited, instead of designating specific motorized trails.

Response: While the current ``open unless posted close" policy allows the user the greatest amount of freedom, it does nothing to prevent the continued creation of new roads and trails created by users who choose to travel cross-country. This policy is causing unplanned and undesigned roads and trails and creating resource damage to soil, water, and vegetation.

125 - Please do not go overboard on closing forest.

146 - The wording of the proposed change will prohibit motorized vehicles in the forest, except on designated trails.

153 - Cannot support an exclusion to the many presently used motorized trails.

255 - Do not want to see the off-road motorcycle trails & off-road bicycle trails closed in the forest in Florida.

256 - Do not want to see trails closed for daily recreational use.

Response: It is not our intent to close trails to off-road motorized traffic. We believe it is an appropriate use of national forests. In some of the more sensitive areas of the forest, bicycles and motorized vehicles are restricted. The prohibition on cross-country travel will curtail the amount of user-created roads and trails and prevent resource damage.

138 - The proposed plan will be a ``Catch 22'' situation for all the off-highway motorcycle riders and if adopted will ultimately keep the responsible motorcyclists out of the forest.

239-252 - The proposed plan does not recognize the existing motorized trails and unmarked travelways, if adopted, it will put motorcycle riders in a no ``approved'' trails. This is a ``Catch 22'' situation.

Response: The above comments express concern that they will not have access to all areas of the forest. We would like to reemphasize that bicycles and motorized vehicles will still have access to all areas of the forest which they currently do. However, in portions of the forest that are sensitive to overuse, that access must be restricted to open, numbered roads and designated trails.

203 - Do not close any roads.

216 - Plan, page 3-2, AIS 1: Urge the adoption of a much stronger statement in the final plan; ``All off-road vehicular traffic (bicycles and motorized vehicles) is prohibited. Vehicles will remain on an open, numbered road, designated trail, or designated area. This policy will be strictly enforced.'' Urge the Forest Service to implement this policy immediately and not wait for two more years.

Response: It is not our intent to close the forest to off-road motorized traffic. We believe it is an appropriate use of national forest. In some of the more sensitive areas of the forest, bicycles and motorized vehicles are restricted. The prohibition on cross-country travel will curtail the amount of user-created roads and trails and prevent resource damage.

172 - Please continue to allow dirt bike riding on recognizable and fire trails.

285 - The new restrictions will close many trails & jeep roads that have been in use for many years, leaving only a few designated roads or trails.

311 - Feel the fire breaks, jeep trails, and motorcycle trails should remain as they are and should be recognized as such.

Response: In large areas of the forest, use will continue as it is now, with the exception of cross-country travel being prohibited. Firebreaks, jeep trails, and unmarked travelways will still be available, and in some areas they may be designated as motorized trails.

Trails

2 - Divide the access users into foot traffic which allows access to all areas except specifically designated sensitive research areas.

Response: Your comment suggests dividing the users into four groups (foot, wheelchairs, bicycles and horses, motorized vehicles) to consider their specific needs. This point was reconsidered, but the ID Team chose to keep to the original two groups of foot and horse traffic, and bicycles and motorized.

2 - Appropriate unmarked motorcycle trails and roadways that should be closed to motorized traffic would be easy to convert to bike and walking trails.

Response: We agree. The intent of the 2-year public involvement process to identify a trail system should include roads or unmarked travelways that fall in this category. The Forest Plan does not make those kind of specific project-level decisions.

2 - All bicycle trails should be open to hikers so the extra miles inure to the benefit of both.

Response: Currently all bicycle trails are open to hikers. No bicycle trails are posted as restricted to bicycles only, but motorized use is prohibited.

2 - Divide the access users into bicycles and horses which allows access to all trails designated for their specific use, open, numbered roads, fire lanes and all unmarked travelways until closed for restoration purposes.

Response: In some parts of the forest, bicycles and horses will be restricted to trails designated for their specific use or to open, numbered roads. In other parts of the forest, they have access to all unmarked travelways just as do other user groups, unless those travelways are posted closed.

2 - Consider the use of horses and bikes for trail maintenance and construction.

Response: Hiking-only trails will be maintained by foot travel only; we have maintenance agreements with partner groups that ensure this.

2 - No open cross country off-trail access.

Response: Thank you for your comment. The intent of the Forest Plan is to prohibit cross-country travel by bicycles and motorized vehicles.

2 - Multi-use trails that can safely be used by hikers, bicycles, and horses, either at the same time or on alternate days.

Response: Shared-use trails are one of the most feasible trail alternatives, and we hope the 2-year public involvement process will identify several trails that can be shared by multiple users.

2 - Establish a minimum of an additional 300 miles of marked bicycle trails within the forests in the next five years.

Response: The 2-year public involvement process to develop a trail system also will identify the needs of the user groups. Your suggestion of 300 miles of bicycle trails translates to about 100 miles of bicycle trails per forest, and this seems like a reasonable goal to carry over into the 2-year access process for consideration.

2 - Divide the access users into include motorized and non-motorized wheel chairs as a group, and allow access to all suitable roads, trails, and travelways.

Response: For access purposes, motorized wheelchairs will be permitted to go whereever motorized activity is permitted, and nonmotorized wheelchairs will be permitted to go whereever nonmotorized access is permitted. See ``Glossary'' for definition of wheelchair.

2 - There should be a definition of ``wheel chair'' so that non-handicapped users do not abuse this term.

Response: Thank you for your comment. A definition has been included in the glossary, adapted from the Americans with Disabilities Act (ADA) definition of a wheelchair.

2 - FNST [Florida National Scenic Trail] should be kept primarily for hikers, consideration should be given to limited special event bicycle use in conjunction with trail maintenance activities.

Response: The FNST is a foot-traffic-only hiking trail on national forest lands and will remain that way. Maintenance agreements with our trail partners provide maintenance along the FNST, and we do not feel bicycle use is appropriate for any reason.

8 - Volunteer does not intend to continue expending efforts on maintaining trails for the benefit of motorized vehicle, bicycles and/or horses.

Response: Thank you for your comment; and it is understandable. Most user groups are dedicated to maintaining their own type of trails (hiking, horse, bicycle, and motorized use). We expect to continue these partnership arrangements.

22 - Concerned that the proposed plan keeps bicycles in the motorized vehicle classification and restricts their use to numbered roads and marked trails.

Response: The ID Team revisited this discussion, but decided to continue categorizing bicycles with motorized vehicles because they have similar resource needs. They require a path or track to follow, whereas foot or horse traffic does not. In large portions of all the forests, bicycles will still have access to open, numbered roads and unmarked travelways unless posted closed.

22 - Negative impacts of bicycles on the trails has been entirely overstated, while benefits have been understated or ignored.

Response: The FEIS discusses both the negative and positive impacts of different recreational uses on the forest.

22 - Potential for a partnership in management of potential bike trails has not been addressed at all.

Response: We currently have many excellent partnerships with user groups to maintain trails and facilities. Forestwide Goal 3 seeks to strengthen these partnerships to meet public needs and sustain the forests.

22 - The Forest Service needs to establish bicycle trails at the same ratio as to hiking trails.

Response: An exact ratio of bicycle and hiking trails may be unattainable. Because bicycles can cover more ground than hikers in a single outing, bicycle riders consume much more of the resource than hikers. For example, 50 miles of hiking trails may be an overnight trip for a hiker, but a bicyclist can

consume 50 miles in a day's ride. It is more logical for each user to define their needs according to how they use the forest, not how other users do.

28 - Forest Service should establish additional marked bicycle trails within the forest.

Response: We recognize that bicycle use is increasing on the national forests and that more trails are needed. The 2-year public involvement process will help identify how many trails are needed and where they should be located.

28 - Changing the access policy will substantially reduce or restrict bicycle use.

Response: In some areas, bicycles will be restricted to open, numbered roads and designated trails. In other areas, they will still have access to all open, numbered roads and unmarked travelways. We do not feel this will reduce use. Identifying and designating trails through the 2-year public involvement process will not reduce use, but merely recognize where it is presently occurring and identify where it should continue to occur.

30 - Allow bicycles to have continued access to the single track trails that give access to interior lands.

Response: In large portions of the interior of the national forests, bicycles will continue to have access to all open, numbered roads, designated trails, and the innumerable unmarked travelways that exist, unless these are posted closed.

33 - Like to ride on trails, they're smoother, quieter, easier and less demanding on the bicycle.

Response: Thank you for your comment. This is the reasoning behind why we placed bicycles with motorized vehicles; they need a trail or track to follow to make the experience enjoyable.

33 - The biking coalition would like to participate in the trails planning process and are willing to serve in that capacity.

Response: Thank you for your comment. Organized bicycle groups are some of our most valuable partners in accomplishing work on the ground, and your involvement in the 2-year access process will be necessary to make it successful.

33 - The Forest Service should consider developing a plan to study the effect of bicycles on the landscape in a variety of settings as well as experimenting with different construction techniques.

Response: The Forest Plan does not include site-specific techniques of trail construction, but incorporates by reference the *Trails Management Handbook* and *Trail South Handbook*. Interestingly, a 1993 joint study by the USDA Forest Service and the former Florida Department of Natural Resources examined the preferred settings for bicycle riding. This information was used in the preparation of the Analysis of the Management Situation (AMS) and is available at the Supervisor's Office and the Florida Department of Environmental Protection.

34 - There should be provisions in the plan for partnerships with recreational users for trail development and maintenance.

Response: We currently have many partnership agreements with hiking groups, horseback riders, off-road vehicle users, and bicycle groups to construct and maintain trails and other facilities. Those partnerships will continue and be strengthened in the future.

34 - Bicycles have far less impact on the trail than a horse and are less intrusive than dirt motorcycles or ATVs.

Response: Trails are usually designed for specific purposes or uses. The trails are impacted when they receive use that was not designed for them. Even shared-use trails must be designed to sustain different types of use. In many cases, single-use trails are a good alternative.

34 - The impact of bicycle trails on the forest has been shown to be positive in a recent study done for the GFA [Gopher, Frog, and Alligator] Trail.

Response: Bicycle riding is an appropriate and important activity on the national forests. Bicycle use will continue to increase in the next 10 years, and we expect to provide more trails for this use.

64 - There is a great need for single-track hiking only trails in Florida.

Response: We agree. The FNST meets a part of that need. There are other hiking-only trails and short interpretive trails, as well as trails in the wilderness, which also will meet this need. Future trails may be identified in the 2-year public involvement process.

64 - There are also safety concerns and considerable trail damage when narrow footpaths designed and built for hiking are overtaken by faster users.

Response: We agree. Some trails, especially hiking trails, are designed for specific uses and other types of use can destroy them. Signposts displaying the type of use allowed on the trail, coupled with good public education, can prevent this from happening.

64 - Restrict ATV's, bicycles and horses to designated trails through the use of signs, notices on maps, physical barriers and strict enforcement.

Response: The intent of the 2-year public involvement process is to better manage the use in those parts of the forest that are heavily used. Prohibiting cross-country travel and restricting bicycles and motorized vehicles to open, numbered roads and designated trails in parts of the forest will help.

67 - Little is said in the plan or EIS regarding how the trail will be managed in various management areas it traverses.

Response: It was decided not to set up a separate management area for the FNST, but to apply forestwide standards to the FNST (as well as other trails) for whatever management area it passes through, to maintain consistency. See forestwide recreation standards RE-1 through RE-5.

67 - Tree harvesting adjacent to the FNST should either be prohibited or limited to techniques which are part of a larger effort to restore areas adjacent to the trail to the original forest type.

Response: Visual quality standards throughout the forestwide standard and management area standard protect the FNST. Harvesting for restoration, clearcutting of sand pine, and scrub jay openings can be seen along the trail and represent excellent interpretive opportunities.

80 - Mountain bikes should be contained on appropriate trails.

Response: We recognize that mountain biking is increasing on the national forests and there is a need to provide specific trails for this use. However, there are miles of open, numbered roads and unmarked travelways that are also appropriate for mountain bike use.

87 - Do not object to off road bicycles being excluded from designated wilderness areas.

Response: Thank you for your comment. All motorized or mechanical equipment, including bicycles, is prohibited in wilderness areas by law.

87 - Off road bicyclists basically have no interest in using the numbered roads within the National Forest system in Florida.

Response: Based on the conversations we had with a number of people at our public workshops, and the volume of comments on this subject, we conclude that many off-road bicyclists use and enjoy the open, numbered roads and will continue to do so.

87 - Popular off road riding areas are exclusively narrow single track trails.

Response: Based on the conversations we had with a number of people at our public workshops, and the volume of comments on this subject, we conclude that open, numbered roads, designated trails, and unmarked travelways are as popular and used as the single-track trails.

90 - There should be advisories installed stating, ``speed & walk (bicycles) only and don't spin areas"; but don't separate bicycles from walk & run areas.
Response: Thank you for your comment. This suggestion will be carried over for consideration during the 2-year public involvement process to develop a trails system. There will continue to be shared use trails where bicyclists, hikers, and runners may encounter each other.

92 - Ask that you [Forest Service] continue to try harder to keep the FNST a foot path only trail.

Response: The FNST is a hiking-only trail and will continue to be.

92 - Perhaps better and more frequent signage would help.

Response: We agree and hope the 2-year public involvement process will aid us in our posting and signs as well as public education.

92 - Great concern is that if the public sees it [FNST] as a bike path now, it will be very difficult to change it later when the traffic builds up and the trail is seriously harmed.

Response: This concern is understandable. Although the FNST is posted as hiking only, bicycles and motorcycles have been known to ignore the signs and ride on the FNST. Our public education efforts must portray the FNST as foot traffic only.

92 - Many bikers in the past, when questioned about their use of the trail have said, ``I didn't see any signs that said no bicycles," or ``The ranger (referring to someone in a Forest Service uniform) said it was all right." One [rider] even had a trail book that designated the FNST as part of the bicycle loop out of Alexander Springs.

Response: We agree that our posting and signs must be improved. We hope the 2-year public involvement process will increase user group understanding of the needs of other groups and increase respect for the FNST.

117 - If the Plan does not recognize the above trails [user-created travelways] then one must assume that the OHV community will be completely shut out which is unacceptable.

Response: In large portions of each forest, open, numbered roads, designated trails, and unmarked travelways still will be available for OHV use. OHV use is an appropriate use of the national forests and we will ensure that this use continues.

117 - We would propose an alternative which would recognize these trails [user-created travelways] for future use and thereby include them as acceptable riding areas and designated as such.

Response: In large portions of each forest, open, numbered roads, designated trails, and unmarked travelways still will be available for OHV use. In other portions of the forests, designated OHV trails may be created to provide for this use.

161 - Given the already crowded nature of Munson Hills Trail, it would be beneficial to actively pursue additional trails as quickly as possible.

Response: We recognize that bicycle use is increasing on the national forests and that more trails are needed. The 2-year public involvement process will help identify how many trails are needed and where they should be located.

161 - In the Apalachicola NF, the unmarked travelways currently in use could be rapidly designated as bicycle trails.

Response: We agree. During the 2-year process where user needs are identified and trails designated, several unmarked travelways undoubtable will be designated as bicycle or shared-use trails.

161 - Would like to see as much shared use as possible so as to maximize the trail-using opportunities for all user groups.

Response: Thank you for your comment. Shared-use trails benefit many users, and we hope to provide shared use as well as some single-use trails for all user groups.

194 - In the new plan, hope to find increasing recreation trail opportunities, both primitive trails like the Munson Hills or developed like the proposed Gopher, Frog, and Alligator.

Response: The intent of the Forest Plan is to provide a variety of recreation settings and experiences. The 2-year public involvement process will help to identify the type of trails and settings that users want.

194 - If some trails are to be closed, new alternatives should be provided in advance so as to not put further pressure on the remaining open ones.

Response: We agree. Enough trails or areas must be available to prevent unacceptable damage to limited areas.

197 - Hikers and horseback riders would find that the number and variety of trails that they are currently using would diminish without motorized use to keep those trails from overgrowing.

Response: This type of use will continue in those large portions of the forest where open, numbered roads, designated trails, and unmarked travelways are available for use.

197 - A designated trail might imply that the trail was perfectly safe and free from any circumstance that might cause injury. If someone was hurt on a designated trail they might enter into litigation with the Forest Service.

Response: Recreating in a natural setting inherently holds some potential for injury and risk. Indeed, there is no such thing as a trail that is perfectly safe and free from any injury-causing circumstance. A designated trail simply provides a reasonable guarantee against getting lost; it does not guarantee against injury.

218 - Plan, page iv, lines 2-3: This passage mentions that the Forest Service has the management responsibility for the proposed 1,300 miles FNST. Since that is the case, the management plan for the trail needs to be addressed in this plan, perhaps by reference.

Response: The Forest Plan references the *FNST Comprehensive Plan*, the *Trail South Handbook*, and the *Trails Management Handbook*. Forestwide standard RE-5 specifically addressed the FNST as a hiking-only trail and incorporates management of the trail by referencing the Comprehensive Plan.

230 - Horses, pedestrians, and bicycles should not be allowed on unmarked travelways unless posted open.

Response: We agree that in some areas of the forest, use must be restricted to open, numbered roads and designated trails. Some unmarked travelways may become designated trails; however, in the general forest area, unmarked travelways will be open for all uses unless posted as closed.

230 - Plan, page 4-10, 0.2-14: Hiking, bicycle and horse trails should be a single trail for multi-use.

Response: This DFC (0.2) is a designated wilderness area and bicycle use is prohibited by law.

230 - Plan, page 4-26, 3.1-28 [Mormon Branch]: Permit a single multi-use trail.

Response: The size of Mormon Branch special interest area may not be conducive to more than one shared-use trail. This suggestion will be carried over into the 2-year public involvement process for consideration.

2 - Throughout the plan there are numerous references to a list of recreational uses in which bicycles have been inadvertently left off some of these references.

2, 22 - All references to specific recreational uses should either include bicycles, where appropriate, or have a general definition that includes bicycles at the beginning and refer only to ``recreational uses'' in the rest of the plan.

Response: Thank you for your comment. We have attempted to incorporate bicycles into these lists where that use is permitted.

2 - With the increase in bicycle usage, lack of trails will cause overuse on existing trails and the use of inappropriate ones.

22 - The lack of bike trails will cause severe overuse of the existing bike trails and the use of inappropriate ones.

Response: We recognize that increasing use impacts existing trails. The 2-year public involvement process should identify the needs of bicycle riders to determine how many miles of trails are necessary to prevent overuse and damage to trails.

28 - Increase in bicycle usage will cause overuse on existing trails and the use of inappropriate ones.

33 - Concerned about lumping bikes with motorized vehicles.

34, 87 - Bicycles should not be put into the same category as motorized users.

72 - Do not categorize a bicycle with motorized vehicles.

Response: The ID Team revisited this discussion but decided to continue categorizing bicycles with motorized vehicles because they have similar resource needs. They require a path or track to follow, whereas foot or horse traffic does not.

30 - As managers of public lands, continue to permit recreational bicycling where appropriate and not limit access only to jeep roads.

90 - Don't push us out of the trails and paths in the forest.

Response: We intend to continue to recognize bicycling as an appropriate use of national forest lands and will continue to provide a variety of roads, trails, and unmarked travelways for their use.

64 - The Florida Trail Association has constructed a long distance hiking trail and it should be preserved as a hiking only trail.

163 - Florida Trail is a foot trail for walking only.

Response: We agree. The FNST is, and will continue to be, a hiking-only trail.

67 - Recommend that the FNST receive its own unique management area, and that lands adjacent to the trail be managed in such a way as to enhance the wilderness experience of hikers.

70 - The significance of the FNST should be reflected in the plan as a distinct management area, and should include DFCs.

Response: The ID Team discussed this possibility, but they felt the forestwide standards applied to the FNST throughout all management areas would ensure visual quality and maintain the integrity of the trail. Forestwide standard RE-5 recognizes the uniqueness of the FNST.

90 - Bicycles are much more akin to hikers, walkers and runners, than to motorcycles, ATVs, cars and trucks.

161 - Bicycles should be included with the hikers and horseback riders, not with motor vehicles.

Response: We agree that bicyclists seek similar settings and experiences as hikers and runners. However, their physical resource requirements (a path, track, trail, or tread to follow) is much more similar to motorized vehicles. We must balance protection of the soil, water, and vegetation resources with the needs of the users.

Recreation

2 - Recreation section of the plan should have more specific provisions which support partnerships with recreational users for specific purposes such as trail development, maintenance, etc.

Response: The Forest Plan does not make specific decisions about projects or partnerships. It is a forest goal to increase all types of partnerships to meet public needs and sustain the forests.

2, 22 - All references to specific recreational uses in the proposed guidelines should include the bicycle as a valid recreational use.

Response: The Forest Plan addresses all recreational uses allowed on the forests, although not all are mentioned specifically for brevity.

13 - The benefits to be derived from rifle ranges offer little to compensate for the lead contamination.

Response: While there is a possibility of lead contamination, it is in a very confined area. This issue is being examined on the national level, and if future studies indicate contamination of groundwater we will consider alternatives for the rifle ranges.

26 - Forest Service should have an interpretive boardwalk through the savannahs and ancient cypress near Sumatra.

Response: Specific topics for interpretation are chosen based on overall resource management needs and public interest.

40 - Enduros are important recreation activities which should be allowed.

Response: Enduros are appropriate events for national forests lands and will continue. They do have potential for environmental damage and must be carefully planned and operated on suitable sites.

70 - Establish forest based educational exhibits along trails and in other recreational sites.

Response: Interpretive trails do exists and several management areas permit interpretive signs and exhibits. We will continue to pursue opportunities to interpret the natural world to our visitors.

71 - Strongly opposed to the recreation proposals in this plan.

Response: This comment is difficult to address without more specifics about what parts of the recreation aspects of the Forest Plan are opposed.

71, 193 - There has not been effective management of recreational use in the past and opening up more at this time is not appropriate.

Response: Although some developed recreation construction will occur at sites where there is a proven demand, our emphasis is to reconstruct existing facilities to standards. Additional designated trails permitted by the Forest Plan are to accommodate various types of nondeveloped recreation use (hiking, horses, OHVs, or bicycles) in appropriate areas of the forest in response to demand from users.

72 - The statement about bicycles and motorized vehicles out numbering horses is not quite right. Horses out number bicyclers 8 or 10 to one.

Response: While we do not have definite statistics about the number of horses, bicycles, and motorized vehicles owned, we do have use figures. The 1996 figures show 30.1 MRVDs (thousand recreation visitor-days) of horseback riding, 31.2 MRVDs of bicycling, 72.0 MRVDs of hiking, and 280.7 MRVDs of motorized use.

92 - Concessionaires could help by explaining to their customers that the FNST is a footpath only. Well briefed USFS employees could be a great help in explaining to the public why it is a foot path only.

Response: We agree. As well as public education, we need to ensure proper signs are posted at all trailheads and intersections. This information is already supplied to forest users by concessionaires, Forest Service employees, and signs.

117 - We realize budget constraints are continuing and therefore new and cheaper ways of upkeep must be constantly strived for.

Response: We recognize this. It is why one of our forestwide goals is to increase partnerships. There are many user groups who willingly volunteer their time to help us designate and maintain trails and facilities.

163 - It would be more enjoyable if all user groups were accorded somewhat equal treatment while in the forest.

Response: Although the Forest Service manages the national forests under the concept of multiple use, not all uses can be accommodated in every part of the forest. Different uses have different requirements, and they are appropriate in some areas and inappropriate in others. User conflicts do occur. We attempt to balance these differing or conflicting uses in proportion to their resource needs and the numbers of users.

163 - Maintain your signage to ensure reasonable orientation for forest visitors.

Response: We do our best to provide adequate signs, even in the face of extreme weather conditions and vandals.

194 - Hope to have access to more old woods roads that are restricted for non-motorized use, designated primitive camping areas whose access is by trails, more interpretive trails for users of all modes, increased opportunities to view wildlife and native forest communities.

Response: Some management areas provide more nonmotorized and primitive settings than others, but we feel overall that nonmotorized settings are provided for in all parts of the forests.

197 - Designated trails would require funds for construction and maintenance, while those funds could be better used for law enforcement to prevent dumping and resource destruction.

Response: Funds for trail construction and maintenance come from different appropriation sources than law enforcement funding; and it is not usually possible to reprogram funds from one appropriation to another.

206 - Recreational pursuits must become compatible with the surrounding natural resources and designated to avoid resource degradation and impacts on wildlife.

Response: We agree. The purpose of Recreation Opportunity Spectrum (ROS) classifications is to match the type of recreational activities with the setting.

206 - Motorized and Roaded Natural are excessively high on alternatives. Primitive and semiprimitive are low on alternatives. More emphasis on primitive and semiprimitive non-motorized recreational opportunities are needed and should be included in the final plan.

Response: Thank you for your comment. The forests do have about 60 percent of the area in roaded natural. In developing alternatives, we did not think it would be feasible to close a significant portion of roads in order to greatly reduce this percentage. The roaded natural spectrum provides a wide range of recreational opportunities on the forests.

227 - Plan, page 3-16, last paragraph. It is neither fair nor appropriate to confine primitive or tent campers to designated camping areas during the general gun hunting season. This standard should be eliminated.
Response: Camping is restricted to designated hunt camps during the hunting season for safety reasons and to reduce impacts to nondesignated areas during a period of high-use numbers.

227, 229 - Plan, page 4-30, Standard 4.2-5: The term ``shoreline improvement'' is too vague and needs to be narrowly defined to conform with the objectives of MA 4.2.

Response: Thank you for your comment. This term is now included in the glossary.

227, 229 - Plan, page 3-15: Standard RE-6 says to ``generally use'' mechanical methods for vegetation management in level 3 or above recreation areas. Prescribed burning should be used in fire-dependent ecosystems at least on a maintenance level.

Response: While we agree that prescribed fire should be used if possible, it is not always possible to prescribe burn in our Level 3 developed sites. Since our forests receive year-round use, creating smoke in these areas is precluded by the numbers of visitors.

229 - Plan, page 4-34: The 276 acres allocated to Ocean Pond is significantly higher than in the previous plan. This is a nice, relatively quiet camping area. The goal should be to keep it this way and avoid over-expansion. Current acreage should be maintained.

Response: Ocean Pond and Olustee Beach are the only developed recreation facilities on the Osceola NF. The 276 acres allocated to MA 4.5 includes both developed sites. The larger acreage allocated does not mean that expansion will occur, but that it can if population pressures increase enough to need it.

230 - Camping year round should be restricted to designated camping areas.

Response: While camping is restricted to designated hunt camps during hunting season for safety reasons, dispersed camping is permitted throughout the rest of the year in most of the forest to provide primitive and semiprimitive camping experiences.

230 - Plan, page 4-10, 0.2-16: We do not understand the philosophy of allowing dispersed camping. It seems to promote cross country travel and perhaps poaching. How does the Forest Service monitor or enforce activities?

Response: We attempt to provide a range of recreation experiences, from primitive and semiprimitive to the more developed. Many visitors enjoy the sense of freedom and exploration that dispersed camping provides.

227, 229 - The Forest Service must develop a carrying capacity analysis for resource-based passive recreation in order to evaluate short and long-term impacts for forest resources and prevent gradual deterioration and degradation to forest resources from over-use. This should also include a carrying

capacity analysis for all camping facilities, but particularly Ocean Pond campground and enlargement of the Olustee Battlefield in the Osceola NF.

229 - The Forest Service needs to conduct a carrying capacity analysis on the recreational access issue.

Response: To date, no satisfactory solutions for determining recreational carrying capacity have been devised, and it has been proven impossible to develop a precise measure of carrying capacity for most forms of outdoor use. In addition, carrying capacity can only be defined in the context of management objectives for an area. The amount of change acceptable for an area relates to the management objectives and can be considered a kind of physical carrying capacity.

Heritage Resources

62 - Add policy to Plan: Sacred burial and burial grounds - all remains, whether historic or prehistoric are our ancient relatives and must be respected and protected from any disturbance.

Response: Addressed in forestwide standards HE-5, HE-15, and HE-17.

62 - Add policy to Plan: Our Village Sites and Ceremonial Sites have never been abandoned no matter how old. Respect these sites and leave them alone.

Response: Forestwide standards for heritage resources indicate respect for these resources. Legal responsibilities to locate, evaluate, and protect these sites preclude leaving them alone. When the archeological study is done it is strictly monitored and disturbance is mitigated.

62 - Add policy to Plan: When engaging in construction or ground disturbing activities in the vicinity of known or suspected Indigenous Peoples' Village Sites, Ceremonial Sites, Sacred Burial Sites and Burial Sites, a 300 foot buffer zone must be observed around the site to ensure adequate protection and sanctity of the site.

Response: Addressed in forestwide standards HE-9 and HE-16. We feel a minimum buffer of 200' is adequate for protection. Should sensitivity of the resources require additional buffer zones, these could be implemented in special circumstances.

62 - Add policy to Plan: Reinterments - Indigenous Traditional Spiritual Values shall be observed in dealing with human remains, funerary items, associated funerary items, animal artifacts, burials and/or the relocation and transfer of grave sites.

Response: The Forest Service will comply with Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 for reinterments of Native American remains (*see* forestwide standards HE-5 and HE-15).

62 - Add policy to Plan: Indigenous People must be consulted concerning any ground disturbing activities that shall take place in the vicinity of their village sites, ceremonial sites, sacred burial sites and burial sites.

Response: NAGPRA relates the appropriate time and contacts for tribal consultation; Native American consultation is not required for every ground-disturbing activity (*see* forestwide standards HE-5 and HE-15).

70 - Stabilize and open to the public, historic sites that will help people understand the navel stores industry, saw mills, turpentine distilling, and other forest industries.

Response: Address in forestwide standards HE-4, -6, -8, and -17. Specific topics for interpretation are chosen based on overall resource management needs and public interest.

88 - The plan gives appropriate attention to protecting and preserving the cultural and historic resources and sites that are important to our national heritage. Commend the Forest Service for its commitment

to protecting and preserving Native American cultural resources, and for the excellent standards and guidelines for managing the archeological, historical, and cultural resources.

Response: Thank you for your comment.

88 - There is no reference in the DEIS to President Clinton's Memorandum of April 29, 1994. There are no Federally-recognized Indian tribes and/or Indian reservation trust lands on or in close proximity to any of the NFs in FL; therefore, it is not likely that any of these lands will be impacted. Strongly recommend the Plan & DEIS include a statement or some type of certification that the proposed Fed. action will not have any adverse impact on tribal govt. rights and/or tribal trust lands and resources.

Response: Comment included in the FEIS; see ``Socioeconomic Environmental Consequences."

Visual Resources

227, 229 - Standard RE-2 concerns visual quality to trail users. Relocating proposed new roads (do not support), temporary roads or skid trails to avoid designated trails only creates new disturbances.

Response: Avoiding existing trails to maintain visual quality is best achieved during the design phase of locating a new road or skid trail. This standard pertains to locating new roads or skid trails, not relocating existing ones.

227, 229 - Plan, page 4-7, Standard 0.1-18: Allows restoration of off-site species for visual purposes. Strongly oppose this standard. Fire should be used, or allow age to eliminate off-site species. This is wilderness.

227, 229 - Plan, page 4-8, MA 0.2 Wilderness with Trails, DFC: Same comment as above.

230 - Plan, page 4-7, 0.1-18: Why in a remote, trailless area be concerned about visual quality? Maintain the natural quality of the area through prescribed fire only.

Response: This standard has been deleted.

Wild and Scenic Rivers

63 - Designate 8 rivers as National Wild and Scenic River areas.

Response: Of the eight rivers suggested, the Forest Service has studied five. The National Park Service studied the Middle Prong of the St. Mary's River and found it ineligible. It will be the responsibility of the State of Florida to study the Apalachicola and Ocklawaha Rivers.

230 - Plan, page 4-10: We support the designation of rivers as wild and scenic and propose that the minimum buffer be a .5 mile corridor width.

Response: Thank you for your comment. The Wild and Scenic Rivers Act of 1968 as amended requires a ½-mile study corridor (¼ mile on each side of the river). Congress has the authority to set the final boundary during designation, but usually stays with the ½-mile corridor.

230 - Plan, page 4-12, 0.3-8: We strongly object to timber harvest within the 0.5 mile corridors width.

Response: Wild and Scenic Rivers Guidelines contain criteria for classifying segments. Although wild segments remain truly wild, it has been determined appropriate for timber harvest activities, row crops, or structures to be within the corridor along scenic and recreational segments.

233 - Maximize the miles of Wild and Scenic Rivers.

Response: Thank you for your comment. The Forest Plan is recommending all rivers studied and found eligible and suitable to be National Wild and Scenic Rivers.

15 - Support the designation of additional rivers as wild and scenic.

21 - Support the proposal that the access policy be revisited, with changes made that would prohibit cross-country motor vehicle travel and close some existing roads.

71 - Support adding four wild and scenic rivers.

80 - Support designating four more rivers as wild and scenic.

171 - Favor designation of the New River, the Sopchoppy River, and the Ochlockonee River as Wild and Scenic Rivers.

208 - Support the addition of the New River and Ochlockonee River and support the Sopchoppy as ``Wild and Scenic Rivers." Also, Alexander Creek and Juniper Creek.

219 - DEIS, page 3-137: Support wild and/or scenic designation of the total 178.6 miles on five river segments.

Response: Thank you for your comment.

156 - No new designations recommended for Wild and Scenic Rivers.

192, 193 - Modified Alternative: No recommendations for Wild & Scenic Rivers.

Response: The four rivers studied met the eligibility and suitability requirements. See Record of Decision for rationale for recommending these rivers as National Wild and Scenic Rivers.

Roadless Areas

11 - Releasing so many roadless areas from the Inventory would prevent access to future potential wilderness sites.

Response: Areas are removed from the Roadless Area Inventory if they no longer meet the roadless criteria. In the future, additional areas can be added to the inventory if they are found to meet the criteria; this is always an option.

215 - Very disappointed that the Forest Service proposed alternative fails to maximize the opportunities to maintain wilderness potential of the 14 inventoried ``roadless" areas.

Response: The areas dropped from the Roadless Area Inventory, notably Baptist Lake and Buck Lake, are heavily roaded and no longer possess any wilderness potential.

215 - Objects to the Forest Service's proposed alternative that six ``roadless" areas be dropped from the roadless inventory. Requests that the Forest Service retain these areas in the roadless inventory and, if necessary, institute appropriate management actions so that all 14 areas can be recommended for wilderness status.

Response: Areas that no longer meet the roadless criteria must be dropped from the inventory. This does not preclude the addition of areas to the Roadless Area Inventory in the future, if they are managed to meet the criteria.

215 - Urges the Forest Service to go beyond the 14 identified areas and actively institute restoration activities in other areas to increase the amount of roadless lands in the national forests.

Response: All areas of the forest were looked at to see if they qualified for the Roadless Area Inventory. While some areas are roadless, we feel they were more appropriated placed in other DFCs, such as special interest area or remote wetland.

215 - Is extremely disappointed that the Forest Service did not consider an alternative which significantly increased roadless areas, DEIS at 2-1, and strongly urges the Forest Service to include such an alternative as the proposed alternative in a revised draft EIS.

Response: Adding or removing areas to the Roadless Area Inventory is not a Forest Plan decision or an alternative. If an area meets the criteria, it is placed on the inventory; if it does not meet the criteria, it is removed.

226 - The Forest Service should reconsider its conclusion that roadless areas should not be increased.

Response: The Roadless Area Inventory is simply an inventory. Decisions are not made whether or not to place an area on the inventory or remove it; if the area meets the roadless criteria it is placed on the inventory; if it does not, it is removed.

230 - Six roadless areas should not be dropped from the inventory under preferred Alternative D. We suggest that the NF plan include keeping these six areas roadless, close existing roads into them. To meet `criteria' and restore those roads at a rate of 5-10% annually.

Response: During the 2-year public involvement process to identify a system of trails, we also will look at identifying which roads can be closed. If the roads existing in the Providence and Bay Creek areas are not needed for resource management, these areas may once again quality for the Roadless Area Inventory.

230 - Clear Lake WSA and Natural Area WSA proposed for wilderness in Alternative D should also be listed on the roadless inventory.

Response: These areas, or parts of them, are retained on the Roadless Area Inventory if they meet the requirements. They will stay on the inventory until Congress designates them as wilderness or until they no longer meet the roadless criteria.

233 - Only walking, low impact camping, and nature photography should be allowed in roadless areas.

Response: The Roadless Area Inventory is simply an inventory of areas which meet the roadless criteria. A roadless area is not a separate DFC or management area and is not withdrawn from the suitable timber base. A variety of activities may occur there, provided they do not significantly change or impair the roadless character. Many forms of recreation, as well as vegetative manipulation and prescribed fire activities can take place without impairing this character.

Wilderness Study Areas

11 - Recommends that Clear Lake Wilderness Study Area become an official wilderness area.

Response: Thank you for your comment. The Forest Plan recommends Clear Lake as an addition to the National Wilderness Preservation System (NWPS).

71 - Natural Area wilderness study areas in the Osceola Forest is very important to include in the wilderness system. Perhaps simply adjusting the boundaries to exclude any portions that do not qualify for wilderness would allow it to be included as wilderness.

Response: The Forest Plan is recommending that Congress release Natural Area from its wilderness study area designation and return to multiple use. See Record of Decision for rationale. Part of Natural Area will be retained on the Roadless Area Inventory.

109 - Wilderness Study Areas (MA 0.4) in the Apalachicola and Osceola NFs should be pursued for designation in every way possible.

Response: The Forest Plan is recommending Clear Lake WSA as an addition to the NWPS. See Record of Decision for rationale.

109 - DEIS, page B-16, DFC 0.4: Motorized vehicles are incompatible until the designation is determined and degrade that area pending a decision.

Response: Only in designated wilderness areas are motorized vehicles prohibited by law. A wilderness study area does not carry the same prohibition; motorized use can occur in these areas as long as the areas are managed to preserve their wilderness character.

216 - DEIS, page 2-3: Have never understood why the Clear Lake area on the Wakulla District was set aside (originally as a Rare II Wilderness candidate roadless area)?

Response: Originally, Clear Lake met the roadless criteria and was placed on the Roadless Area Inventory. During evaluation of the area in the late 1970s and early 1980s, it was found to be eligible and Congress designated for further study as a wilderness study area. See Record of Decision for rationale for recommending Clear Lake as an addition to the NWPS.

227, 229 - Impassable Bay should be changed from MA 4.1 to MA 0.4.

Response: Thank you for your comment. We do not believe there is a need for additional wilderness on the Osceola NF.

227, 229 - Request Mason Bay be considered as proposed wilderness, MA 0.4.

Response: Mason Bay was examined to determine if it fit the roadless criteria. Its small size (< 900 acres) was not close to the 5,000 acres recommended by the criteria. In addition, the entire area of Mason Bay is in DFC 3.0, special interest area, in the Mud Lake special interest area and we felt this gave it a high measure of protection. Placed in DFC 3.0, it is withdrawn from the suitable timber base.

230 - Plan, page 4-13, Wilderness Study Areas: These designated areas should also be restricted from use by motorized vehicles.

Response: Only in designated wilderness areas are motorized vehicles prohibited by law. A wilderness study area does not carry the same prohibition; motorized use can occur in these areas as long as the areas are managed to preserve their wilderness character.

Wilderness Areas

63 - I urge the NFs in FL to be managed as a national natural preserve and wilderness area with no development.

Response: The intent of the Forest Plan is to manage the national forests in an ecologically sound manner. Unlike the national parks, where preservation is the goal, the national forests are mandated by law to provide part of the nation's timber supply, and to function as economically viable managed forests.

71 - The guidelines for Pinhook Swamp need to be modified to give it the same status as a wilderness with research applications.

Response: Research can occur in the Pinhook whether it is a wilderness or not. Placed in DFC 1.0, Remote Wetland, it will remain as one of the more natural areas of the forest where influence from human activities is negligible.

71 - Support increasing the areas that are designated as wilderness. Any areas that could be considered for wilderness management should be done so.

Response: Thank you for your comment. The Forest Plan recommends the addition of Clear Lake to the NWPS.

107 - Unable to find an explanation for omitting Pinhook Swamp as a wilderness area from all Alternatives except D, although the Plan indicates it is suitable for wilderness status.

Response: See Record of Decision for rationale for the selected alternative.

109 - DEIS, page B-15, DFC 0.1: It would appear a direct contradiction of ``trailless" to state in DFC that ``horse trails provide access."

Response: DFC 0.1 does not include horse trails.

156, 192, 193 - Modified Alternative: No wilderness recommendation, all 9 roadless areas release to suitable for timber production classification.

Response: The Forest Plan is recommending the addition of Clear Lake to the wilderness system. Managed as wilderness since 1983, its potential for wilderness designation should not be overlooked. See the Record of Decision for rationale. Roadless areas are placed on the inventory if they meet the roadless criteria. Areas on the roadless inventory are not removed from the suitable timber base.

171 - Favor the creation of the Clear Lake Wilderness area and urge you to establish more such areas.

Response: Thank you for your comment. The Forest Plan recommends the addition of Clear Lake to the NWPS. Future potential wildernesses will be examined in each revision of the Forest Plan.

203 - Do not designate any new wilderness areas.

Response: The Florida Wilderness Act of 1983 requires the Forest Service to evaluate the existing wilderness study areas and roadless areas for their wilderness potential and to recommend to Congress those areas found suitable for the NWPS.

206 - Wilderness designation is inadequate.

Response: The Forest Plan recommends the addition of Clear Lake to the NWPS. While it is a small addition, it is an ecologically important one. The option remains in future Forest Plan revisions to evaluate other areas and recommend to Congress that they be designated.

221 - Expansion of the wilderness areas will also improve wildlife habitat and encourage recreation which does not impact the forest.

Response: The addition of Clear Lake to the wilderness system will meet both these needs. Also, DFCs such as remote wetland, special interest area, and minimum development, nonmotorized will provide both these opportunities.

227, 229 - Plan, page 4-6: The circumstances under which plowlines would be permitted need to be spelled out very clearly in the standards.

Response: Plowlines would not be permitted in wilderness since motorized and mechanical equipment is not allowed. However, in the case of wildfires, a decision to use a tractor-plow may be made by the Regional Forester. In wilderness, firelines (not plowlines) are constructed with hand tools, or light-on-the-land techniques such as water, foam, or wetting agents will be used.

227, 229 - Plan, page 4-6, Standard 0.1-2: Support aerial ignition, but need criteria listed in the plan to ensure that fire is suppressed only in extreme cases.

Response: Aerial ignition is used most often during prescribed burns, but it also can be used to combat wildfires by igniting a backfire. Although all wildfires are suppressed, the methods use range from simple monitoring to full-scale attack. In the forestwide standards under ``Wildland Fire Suppression," suppression criteria is not specifically listed, but the factors considered in selecting the appropriate suppression response are included.

227, 229 - Plan, page 4-7, Standard 0.1-9: Insect and disease outbreaks should not be controlled in wilderness areas and wilderness study areas.

Response: The Forest Plan reflects policy included in the Forest Service manual and is an attempt to harmonize wilderness management with adjacent land management activities. For insect outbreaks, notably the southern pine beetle, it is crucial to control outbreaks before infestations spread to adjacent stands.

229 - Plan, page 4-7, MA 0.1: Has too much flexibility regarding creation of firelines, fire suppression, and tree cutting. More specific standards limiting these activities need to be developed.

Response: The intent of the Forest Plan was to allow the District Ranger as much flexibility as possible in determining the appropriate suppression method.

229 - Any decision not to recommend Mason Bay should be fully explained and justified.

Response: Based on your comment, Mason Bay was examined to determine if it fit the roadless criteria. Its small size (< 900 acres) was not close to the 5,000 acres recommended by the criteria. In addition, the entire area of Mason Bay is in DFC 3.0 in the Mud Lake special interest area and we felt this gave it a high measure of protection. Placed in DFC 3.0, it is withdrawn from the suitable timber base.

230 - Plan, page 4-7, 0.1-17: Why allow trees to be cut at all? Please justify and clarify statement.

Response: It will sometimes be necessary to cut trees in a wilderness area. Examples include hazard trees along trails, removal of understory trees in an RCW colony, improving scenic vistas along trails (common in mountainous areas), restoration of historical vegetation, and wildland fire suppression

230 - Place priority on road closures within the NF interior and adjacent to wilderness areas.

Response: We agree that these may be two areas for priority road closures, and this recommendation will be carried over into the 2-year public involvement process when looking at possible roads to close.

230 - Plan, page 4-5, Trailless Wilderness: We support the concept of trailless wilderness and would like to see an increase in dedicated acreage. Why is there no trailless wilderness in the Osceola?

Response: Currently, the only designated wilderness on the Osceola NF is the Big Gum Swamp, and a designated trail already exists there. Removal of this trail was discussed, as well as recommending Pinhook as a trailless wilderness in Alternative D. However, the preferred alternative represented the best mix of uses, allowing trail experiences in wilderness but also allowing for the ``trailless'' experience to be obtained in other DFCs such as remote wetlands and special interest areas.

230 - Plan, page 4-8, Wilderness with Trails: We support maintaining these areas in as primitive condition as possible including efforts to revegetate roads and remove buildings.

Response: Thank you for your comment. We will continue to manage our wilderness areas to preserve their wilderness character.

233 - Convert the Wilderness Study Area (Natural Area) in the Osceola NF and the Wilderness Study Area (Clear Lake) in the Apalachicola NF to wilderness with trails.

Response: The Forest Plan recommends the addition of Clear Lake WSA to the National Wilderness Preservation System. See Record of Decision rationale for not recommending Natural Area WSA for wilderness.

109 - The Forest Service is encouraged to proceed with wilderness designation (Pinhook Swamp Roadless Area) and buy out inholdings.

230 - We heartily approve the Pinhook Swamp designation as a roadless area. The area should also be proposed as wilderness and expanded by future acquisition.

Response: Thank you for your comment. Pinhook acquisitions will continue. The DFC of remote wetland will maintain the character of the Pinhook Swamp. See Record of Decision for rationale for the selected alternative.

209 - Not enough land is being set aside for wilderness, neglecting what should be the Forest Service's primary objective.

219 - DEIS, page 3-140: Agree with wilderness designation as described in Alternative D.

Response: While Alternative D recommends the most acres for wilderness designation, the Regional Forester has determined that the preferred alternative represents the best balance of resources. See Record of Decision for rationale for the selected alternative.

Preservation

41 - Preservation and conservation of natural resources should be a top priority.

Response: We are committed to the conservation of our natural resources. We manage some portions of the forest to preserve their natural values; in other portions, we manage for multiple uses.

41 - The forests should be managed in such a way as to emphasize, improve, protect and preserve all resource areas.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

80 - Our forests are a valuable resource for the public, not for special interest groups, and we need to preserve them.
Response: The national forests are a public resource and are not managed to benefit any special interest group. We attempt to provide for all appropriate uses while balancing that use with protection of the forest resources.

161 - Support forest preservation, I find that we will allow cc [clearcutting] and other methods of timber harvest, but prohibit cross-country travel by bicycles.

Response: The forests contain many unique features, some of them are very sensitive to disturbance or are endangered. When a timber sale is planned, areas where activities will take place are surveyed by people who are trained to recognize these special features and the timber sale is modified to protect them. The general public usually does not have this training and by traveling cross-country they could inadvertently destroy one of these unique features.

209 - Little emphasis was placed on the preservation, revitalization, conservation and regeneration of our forests, and restoration of the natural conditions.

Response: We feel our commitment to conserve and protect biodiversity is reflected in the goals, objectives, and standards in the Forest Plan. Our emphasis is on restoring and maintaining ecosystem composition and structure within its natural range of variation.

223 - Eliminate the use of heavy equipment.

Response: The Forest Plan emphasizes using light-on-the-land techniques whenever possible, such as using prescribed fire for site preparation instead of mechanical means. However, there always will be cases when heavy equipment is needed, and our standards, Best Management Practices, and mitigation measures act to prevent or reduce impacts to an acceptable level.

209, 223 - Encourage light impact uses: i.e., environmental education, hiking trails, non-motorized boating and other activities which have no adverse effects on the wildlife and natural systems.

219 - Only low impact land use options compatible with natural settings should be allowed.

Response: We encourage light-on-the-land techniques and philosophies for all activities, from recreation to prescribed burning to timber harvesting. In those cases where low-impact techniques are not always possible, Best Management Practices, mitigation measures, and forest standards will provide protection for the resources.

Special Interest Areas

11 - Would like to see the Wallace Tract added as a special interest area.

Response: This idea was discussed in great length and given much consideration. In the end, however, it was decided to include the Wallace Tract in the forest/urban interface management area.

11 - Pleased that the River Sinks Tract will be managed as a special interest area.

Response: Special interest area does seem to fit this area quite well.

21 - Concerned that the Bradwell Tract designation of a SIA [special interest area] could prevent the implementation of needed timber management activities or ``off-site" slash pine conversion to longleaf. Redesignate the Bradwell Tract as MA 7.3 - Longleaf/Slash Pine Adaptive Management, No RCW Management.

Response: Designation as special interest area does not preclude restoration. There was discussion about removing this from the special interest area designation, but it was decided against it.

157 - The Forest Service should consider expanding the Leon Sinks Geological Area to include most of the Munson Sandhills.
Response: This idea was discussed at great length and was put into one of the alternatives. It has been included in the forest/urban interface management area.

157, 216 - Forestwide objectives should more clearly specify large set-aside areas where these animals and plants will be protected and their habitats properly managed. On the Ocala NF, the sand pine scrub region contains most of the unusual endemic animals and plants. On the Apalachicola NF, the Post Office Bay area contains the most.

Response: We believe large areas are set aside which will benefit these endemics in ways other than on the rest of the forest.

201 - Plan, page 1-6, para. 2: Research natural areas, and similar areas of high ecological integrity, are needed as reference areas which can be used wherever definition or application of natural, minimally impacted conditions become necessary.

Response: We did consider placing several areas on the forests into research natural areas. Some of these areas have received other designation such as special interest area.

216 - Possibly the Forest Service should consider expanding the Leon Sinks Geological Area to include most of the Munson Sandhills because of this small region's biotic uniqueness and high potential for recreational use in the future.

Response: We feel that an adequate area is designated for the protection of Leon Sinks. The area surrounding Leon Sinks has been designated as the forest/urban interface management area to address the increased use and provide for controlled access.

226 - It would be in the best interests for the Forest Service to develop areas sufficient size and designate them as National Forest Integrity areas and Research Natural Areas.

Response: We did consider placing several areas on the forest into research natural areas. Some of these areas have received other designation such as special interest area.

226 - The plan could be significantly improved by defining significant size areas for protection of ecological integrity and health, especially the few remaining longleaf pine forests.

Response: We did consider placing several areas on the forest into research natural areas. Some of these areas have received other designation such as special interest area.

227, 229 - Plan, page 4-17, MA 2.1, Standard 2.1-4: Canoe trails not needed in these RNAs, as there are no canoe-able water bodies.

Response: This standard has been deleted.

227, 229 - Plan, page 4-19, Standard 2.1-9: Remove the word ``permanent."

Response: The wording has been changed.

227, 229 - Plan, page 4-22, Standard 3.1-9: Temporary openings of 10 acres are too large for special interest. Reduce the maximum size from 10 acres to 5 acres.

Response: The 10-acre limit is a maximum, not a required size. We have received comments requesting that this be enlarged for restoration in savannahs.

227, 229 - Plan, pages 4-23 & 4-24: In the listing of the areas, the value for which each area is to be managed should be noted.

Response: The value of the area is mentioned in the description.

227, 229 - Plan, page 4-24, Standard 3.1-14: This standard should be deleted.

Response: This is in keeping with the private, game farm historic site.

227, 229 - Plan, page 4-25: Middle Prong of the St. Mary's River, the designated area should be expanded to include a wider buffer along the river.

Response: This has been done.

227, 229 - Plan, page 4-25: After standard 3.1-23, add the following: ``Prohibit construction of any facilities (including boardwalks or other access) within the area to protect the integrity of the site. An interpretative kiosk or similar structure may be placed within the DOT [Department of Transportation] rest area for public education purposes."

Response: Access to this area may be developed at some future time. Access may be needed to allow public enjoyment of the area.

227, 229 - There are no FWO pertaining to management of other special areas on the NFF that provide essential habitat for endemic, rare or relict plants and animals, such as the Munson Sandhills or Post Office Bay in the Apalachicola NF. Request that an objective be developed that recognizes these important community types, and describes measurable steps necessary to accomplish the goal of protecting biodiversity on the NFs in FL.

Response: There are several goals that address this issue (Forestwide Goals 6, 8, & 9).

230 - Plan, page 4-22, Special Interest Area: 65% motorized is excessive.

Response: The impacts that may result from a road or roads depend on many factors. We will continue to consider these impacts on the various special interest areas and make adjustments as necessary.

227 - Plan, page 4-16, Standards 3.1-28 & 3.1-29: We request that these standards and guidelines be revised to prohibit multiple use trails or salvage logging within 100 meters of either side of the entire length of Mormon Branch.

229 - Plan, page 4-26: These standard and guidelines should prohibit all trails of any kind and all salvage logging within 100 yards of Mormon Branch on both sides and within 100 yards of Juniper Run for their entire lengths within this special interest area. The only permitted use of the rest of the area should be a primitive trail, and only if it is located away from the populations of listed plant species and away from areas showing high use by bears.

Response: These standards allow trails and salvage, but they do not mandate them. Special interest areas are provided for the public to use and enjoy which may include the need for trails. Any activity within a special interest area must be consistent with the preservation of special attributes for which the area was established (Standard 3.1-1).

Wildlife

21 - In years of low production of the saw palmetto berries, harvesting of these berries could severely impact a food source for wildlife. We recommend managing the harvest with control on amount harvest and where.

Response: The Forest Plan decision was to permit the harvest of palmetto berries. The amount and location of palmetto berry harvest is a decision that will be made at the district level. The current years production and known areas of high wildlife use factor in the decision of how many permits to issue and the amount and location of collection for each permit.

21 - Plan, page 3-28: Designates hardwood inclusions to retain Sherman's fox squirrel habitat, but no mention is made concerning management in the sand pine and scrub oak habitat. Fox squirrels have been documented utilizing scrub; therefore, further consideration and investigation is warranted when developing management plans for sand pine and xeric oak scrub habitats.
Response: Not all standards that impact wildlife will be found in the wildlife section. Standards are arranged so that the resource staff that is implementing an action will most likely find that standard in their resource section of the Forest Plan. Forestwide standards VG-24 and VG-27 in the ``Vegetation" section of the forestwide standards will help ensure that fox squirrel habitat in scrub oak and sand pine scrub will be available for fox squirrel use.

21 - Plan, pages 3-18 to 3-19: There is no discussion of the unnaturally dense ground cover of saw palmetto and gallberry, nor the desirability of having a wiregrass, runner oak, huckleberry, and blueberry ground cover.

Response: There is some discussion on the condition of the understory in the previous pages.

93 - Recommend that the Forest Service propose a strategy for monitoring the effects of reduced forage availability in a BA [Biological Assessment].

Response: The Biological Assessment and Forest Plan includes standards that will be monitored as part of the reduced foraging for RCWs.

124 - Why allow nonnative species of plants to be planted for wildlife? What wildlife? Are you planting for quail, doves?

Response: There are existing cultivated wildlife openings that are planted with nonnative, noninvasive species. These species (like millet) are used simply because they are more attractive to wildlife like doves and they are noninvasive as required by forestwide standard VG-38.

204 - Plan, WL-5: There are activities that occur with special-use permits other than those associated with rights-of-way maintenance that may impact gopher tortoises and their burrows.

Response: Many factors go into the development of standards such as the magnitude of the regulated activity and the likelihood of harm or damage to resources. Maintenance of rights-of-way has the potential to impact large areas and many gopher tortoise sites. Other special-use permits many be required to follow similar standards but this will be decided on a case-by-case basis according to the potential impacts of the proposed activity. This standard will be reviewed as new information is available; i.e.: the burrow collapse study on the Wakulla Ranger District.

206 - Fragmentation of wildlife areas should be avoided and protection of old-growth areas increased.

Response: We agree. The Forest Plan has used the Region 8 (RCW EIS) guidance on RCW management and old- growth management to address these issues.

215 - Roads through the NFs in FL have resulted in a myriad of adverse direct, indirect, and cumulative impacts to Florida wildlife. Most obviously, roads result in deaths of state or federally listed species including Florida black bears, gopher tortoises, scrub jays, and red-cockaded woodpeckers. Roads also cause direct destruction of habitat; fragmentation of habitat into smaller areas; and the creation of ``avoidance zones'' where certain species not only avoid the road surface but also an area near the road surface.

Response: We agree that roads can have negative many effects on wildlife and other resources. However roads are needed for many purposes, including forest management practices like prescribed burning. See the FEIS and the Biological Assessment for a more detailed discussion of these effects. Little if any new road construction will occur in the next planning period. The proposed access policy will result in the closure of some forest roads. The roads having the greatest effect on wildlife (county, State, and Federal highways) are outside the scope of the Forest Plan.

215 - The revised Plan should also incorporate species specific densities for the various species in the national forests who are sensitive to road impacts, and the densities should be set at a level which advances the conservation of these species.

Response: Road density standards would be an unrealistic standard for national forests. Variations in terrain, boundaries, and types of roads are too wide to establish forestwide road densities. The management area descriptions give an indication of the density of roads in each.

227 - Plan, page 3-27, Standard WL-4: Why is sand pine excluded?

Response: Gopher tortoises can burrow out of collapsed burrows in the deep sands where sand pine is grown.

230 - Plan, page 3-29: Wildlife Structure Habitat section is vague and inadequate. How will you implement? When and Where? What forest lands? How will a need be identified and effectiveness determined.

Response: This paragraph was intended to give some information on structural habitat. We did not see the need in specific standards and guidelines for these other than what already had been prescribed for snags and RCW nest boxes. Also, the *Forest Service Wildlife Management Handbook* provides guidance for these activities.

233 - The removal of exotic plants and animals must be a constant top priority.

Response: Thank you for your comment. Invasive exotics are a priority.

21 - Plan, page 3-28: It proposes to create either cultivated or uncultivated wildlife openings, a more detailed discussion of this topic is recommended.

206 - Oppose the use of food plots.

227, 229 - Plan, Standard VG-35: Do not support wildlife food plots, or planting of exotic species in any existing areas. WL-14: Opposed to the establishment of any new food plots.

Response: The use of food plots by the Forest Service is just one of many tools used to achieve the multiple goals of the agency. Food plots are used for several purposes including hunting, photography, and wildlife observation. This forestwide standard will help ensure that areas with undisturbed ground cover are not used as wildlife openings. Only noninvasive species will be planted in these areas. Traditionally these areas have constituted about 30 acres of the more than 1.1 million acres of the national forest in Florida. (Note: In the final Forest Plan, WL-14 has been changed to WL-20 and VG-35 to VG-38.)

215 - It is imperative that the Forest Service consider the needs of species who are likely to be reintroduced into national forest areas.

216 - Would vigorously support the reintroduction of bison onto NFs in FL in lieu of cattle.

227 - The Forest Service should consider reintroducing wildlife species that were extirpated at some time in the past. Example is the bison which could be used to take the place of cattle on the ANF [Apalachicola NF].

227, 229 - Add the following forestwide objective: ``By 2005, establish an area of 10,000 acres on the Apalachicola NF in which the reintroduction of the bison can be tested."

233 - Experimental reintroduction of bison should be started.

Response: This Forest Plan does not preclude reintroduction of species, but this would be a joint decision in coordination with agencies responsible for managing wildlife such as the Florida Game and Fresh Water Fish Commission and the U.S. Fish and Wildlife Service. This is addressed in the standards and guidelines for wildlife and fish.

219 - Plan, Chapter 4: Hunting, fishing and wildlife viewing goals are curiously omitted.

219 - DEIS, page 3-49, para. 4: Believe that the important cooperative programs with NFs in FL and the benefits and contributions of hunting, fishing and wildlife observation deserve more attention in the LRMP & EIS.

219 - Major nongame and game wildlife resources, and the use of these resources, was hardly mentioned. Disappointed that these resources and uses were not adequately discussed and urge that this be appropriately done in the final documents.

219 - Plan, pages 3-3 to 3-10: Strongly contend that the LRMP should include a section on game and nongame wildlife and hunting and fishing. Tremendous management efforts and proper use of all wildlife and fish resources, in cooperation with the FGFWFC [Florida Game and Fresh Water Fish Commission], should be appropriately addressed in the final LRMP.

227, 229 - Plan, WL-14: This section makes only vague reference to non-game species, which comprise most of the wildlife on the NF. This section is inadequate in regard to these species.

Response: The Forest Plan and FEIS have been strengthened in these areas.

227, 229, Where would conservation and protection of habitat for neotropical migrant bird species fit in this objective?

227, 229 - Request a FWG be developed that specifically details the NFs in FL's commitment to conserve and protect habitat for neotropical migrant bird species on the NFs in FL.

Response: The conservation and protection of habitat for Neotropical migrants would come under forestwide Goal 9. Manage for habitat conditions to recover and sustain viable populations of all native species, with specific emphasis on rare species. The Forest Service is also a participant in the ``Partners in Flight'' initiative, a multinational multiagency program for the conservation and protection of Neotropical migrants.

Fisheries

227, 229 - Plan, page 3-30: Standards need to be developed that describe which species of aquatic plants are to be controlled and permitted control methods.

Response: These are project specific details which will be covered in the National Environmental Policy Act (NEPA) documentation completed for the project.

227, 229 - Plan, page 3-30: The natural lakes and ponds on the ONF that have been placed in this category should be removed and placed in either the Primitive or Native categories.

Response: The natural lakes have been moved from enhanced to developed.

227 - Note that the table on page 3-30 states that fertilizer and/or lime is used to ``enhance'' fish production on some Ocala water bodies. Surprised to learn this, has expressed opposition to these practices in natural waters in the past and have not been given an opportunity to provide comments on any subsequent proposals.

229 - Plan, page 3-30: The table states that fertilizer and/or lime is used to ``enhance fish production on some Ocala water bodies.'' Surprised to learn this, has expressed opposition to these practices in natural waters in the past and have not been given an opportunity to provide comments on any subsequent proposals.

Response: This has been changed so that only ``borrow pits'' will be limed and fertilized on a regular basis for fish production.

PETS (Proposed, Endangered, Threatened, or Sensitive)

21 - All studies concerning the gopher tortoise burrow buffer zone should be critically looked at before implementing.

Response: The gopher tortoise burrow protection zones are not only intended to protect gopher tortoises from entrapment. More important, it also will help protect other species that inhabit these burrows as well as any gopher tortoise nests that may occur in the apron of sand at the entrance to the burrow.

41 - The potential impacts of listed T&E species is lacking.

Response: The effects on threatened and endangered (T&E) species are covered in the Biological Assessment, which was not included in the draft set of documents.

41 - Coordination with other appropriate agencies, such as FSFWFC, FDEP and US Fish, is absent.

Response: The U.S. Fish and Wildlife Service and the Florida Game and Fresh Water Fish Commission were both involved with the development of the Forest Plan. The U.S. Fish and Wildlife Service will be consulted and issue a biological opinion in regards to the effects from the Forest Plan on T&E species. Numerous other local, State, and Federal agencies were given the opportunity to be involved and comment on the development of the Forest Plan and supporting documentation.

88 - DEIS, Appendix E, Table: Should be revised, see comment number for list. Sensitive Species list should be revised to show the current status of candidate species, as designations ``C1," ``C2," ``C3," etc., have been discontinued. The Florida Black Bear on the Sensitive Species list is presently the only Apalachicola NF species in this table with ``Candidate" status.

Response: The list has been revised.

93 - Recommend that the Plan include provisions to continue using the best currently available information, in addition to recovery plans, for stewardship of PETS species. Recommend including standards in the Plan that call for continuing to optimize good stewardship of PETS species using prescribed fire and current fire information and investigate the effects of prescribed fire on PETS species.

Response: The Forest Plan standards and guidelines tier to the recovery plans which are adequate as far as sideboards on management. We do intend to use the best information available and amend these standards and guidelines when necessary. Additional standards have been added.

93 - Recommend including adequate information and evaluations in a BA of the potential effects of implementing the Plan on species protected under the Endangered Species Act.

Response: Information has been added in the Biological Assessment.

110 - References to East Indian Manatee should be changed to West Indian Manatee.
Response: Thank you for your comment. This has been corrected.

201 - Plan, page 1-6, para. 5: To accomplish broader goals of the plan, including biodiversity conservation, some accounting, at the population level, of all PETS is needed.

Response: The paragraph referenced is a summary of the Analysis of the Management Situation which specifically identified the need for RCW habitat management and objectives.

201 - Plan, page 3-28, para. 10: PETS - These should relate to species-specific population monitoring objectives, perhaps best addressed in the section on monitoring tasks.

Response: The referenced page and paragraph do not seem to go with the comment and we do not quite understand this comment. This section contains standards and guidelines.

206 - The recovery of this endangered species (RCW) and protection of threatened species like the Florida black bear should supersede timber goals and recreation demands.
Response: Protection of threatened and endangered species is required by law and is of utmost importance. However, in many cases, this does not preclude timber harvest or recreation management.

215 - Concerned that the Forest Service planning process is proceeding in the face of inadequate biological data, and urges the Forest Service to issue a revised DEIS and Management Plan which includes necessary information regarding the status of all listed and sensitive species. Requests that the Forest Service complete conservation assessments for all listed and sensitive species and map habitat components for those species.

Response: A Biological Assessment has been completed and is included as Appendix F in the FEIS. A viability assessment for a number of species has been completed and is included in Appendix E in the FEIS.

220 - It appears that past management strategies have been extremely beneficial in creating abundant habitat and populations of desired species.

Response: That is true in many instances. This Forest Plan combines many past management practices with new practices and provides an adaptive approach.

227, 229 - Plan, Standards WL-11, 12 & 13: These standards are too restrictive to ``known" breeding sites and should apply to all suitable habitat on Apalachicola NF and Osceola NF.

Response: These standards have been changed.

227, 229 - Plan, page 5-6, Goals 3, 4, 5, 6 & 7: There is a need to establish test plots to quantify effects of different activities on species.

Response: This is a part of the monitoring in Chapter 5 of the Forest Plan.

234 - Unable to find a monitoring task sheet for PETS plants. I support the idea of keeping track of locations and trends in PETS populations. A system needs to be implemented wherein changes in PETS populations resulting from specific management activities can be quantified.

Response: A task sheet was included in the draft Forest Plan and is included in the final Forest Plan. Activities within the PETS populations will be monitored.

201 - Plan, page 3-18, paras. 2 & 3: There are other PETS in Florida's National Forests. Objectives should exist for each one.

234 - Plan, page 3-18: Why are some of the PETS species mentioned individually and some are not?

Response: These are standards and guidelines that reference species which have recovery plans.

216 - Three amphibians that probably occur on the NFs in FL are under consideration for listing as federally threatened species: Flatwoods salamander (*Ambystoma cingulatum*), striped newt (*Notophthalmus perstriatus*), and gopher frog *(Rana capito*). Urge the Forest Service to include these species on its list of sensitive species that are targeted for special management.

227, 229 - Plan, pages 3-25 & 28: Recommend two additions to the list of sensitive species of wildlife. Specifically, the striped newt and gopher frog are under consideration for federal listing, and request that they be added to the list of PET species.

Response: The striped newt and gopher frog are currently on the Forest Service sensitive species list. Sensitive species are species whose population viability is of concern because of known, or predicted downward trends in, population size or habitat capability. Effects to sensitive species are considered for site-specific projects with a Biological Evaluation of the project. The Biological Assessment of the effects from implementation of the proposed Forest Plan only considers the federally listed species or PET species.

227, 229 - Plan, page 3-20, Standard VG-16: This standard should apply only if surveys have been completed, otherwise it should read ``suitable habitat" for PETS species.

227, 229 - Plan, page 3-23, Standard VG-34: Add ``PETS surveys should be done before herbicide use."

Response: A Biological Evaluation on site-specific projects will determine the need for surveys in the project area.

Red-cockaded Woodpecker

85 - Support the establishment of 200 foot perimeters around RCW nesting sites in the northern half of the Ocala.

Response: All RCW sites on the forest have 200-foot perimeters around cavity trees for their protection.

88 - Recommends that the Forest Service cease timber harvesting under the new standards and initiate Section 7 consultation with the FWS if monitoring indicates a 5% or greater decrease in the number of RCW groups associated with new timber harvests. Information should be added to the EIS describing this measure.

Response: Monitoring standards of the reduced foraging guidelines for RCW has been developed. These are included in the Biological Assessment of the FEIS and the ``Monitoring'' section of the Forest Plan.

88 - DEIS, pages 3-52 and 3-53: The Forest Service begins a discussion of the relationship between foraging habitat quantity and quality on the Apalachicola NF and RCW group and population health, they do not provide adequate data, analyses, or other documentation to support the proposed change to foraging guidelines.

Response: The FEIS in the ``Wildlife Effects'' section and the Biological Assessment contain information regarding RCW-foraging quantity and quality and the health of the birds, as observed through numerous studies, two of which were conducted on the Apalachicola NF.

93 - Plan, page 4-41, Vegetation, 7.3-1; & page 4-43, Vegetation, 7.2-7: These two sections omit indicating that reduced RCW foraging standards are planned to apply to timber harvests on the Apalachicola RD.

Response: The standards have been changed to reflect the exceptions.

104 - Apply updated RCW guidelines to pine management on the forest to allow the testing on about 12,500 acres of the irregular shelterwood system of pine management as an alternative to clearcutting.

Response: This amount of even-aged management is significantly outside the Region 8 (RCW EIS) guidance. We have added 2,000 acres of irregular shelterwood tests as an exception to the Regional guidance.

104, 108, 109 - Peer-reviewed and published research does not support the use of ``rotational constraints,'' or of a maximum ``patch size,'' when partial cuts (irregular shelterwood or seedtree) are used as the regeneration technique.

Response: These constraints were determined based on an EIS done by the Southern Region of the Forest Service in consultation with the U.S. Fish and Wildlife Service and input from the scientific community.

120 - RCW Management—Urge the agency to use results of local RCW foraging study (Beyer et al.).

Response: The results of the Beyer et al. study was just one of the local foraging studies used to develop and justify the new foraging guidelines for the Apalachicola RD.

124, 157 - Am I right in assuming that the 506 will not be living in inserts?

Response: Yes. Inserts are intended as a short-term solution to the shortage of trees in the older age classes that the RCW uses for cavity excavation. Currently only a small percentage of RCW clusters have inserts.

124, 157 - A serious effort must be initiated to find out under what conditions the birds WILL establish new groups on their own. And management should be directed toward creating those conditions.

Response: We agree. The management strategy in this Forest Plan tiers to Regional direction which emphasizes retention of large pine trees and prescribed burning in habitat management.

160 - The recent Supreme Court decision in the case of Bennett v. Spear requires that, in managing for endangered species, you (a) base your decision making on science and facts, not on surmise and conjecture and (b) that you consider economic impacts.

Response: The decisions are based on input from experts in the field of RCW biology and economics impacts have been considered in the ``Socioeconomic'' section of the FEIS.

192 - Why is it that one localized study in the Francis Marion in SC can be applied to all national forests throughout the southeast, yet the Florida results are limited to one ranger district?

Response: At the time the Recovery Plan was written there were few studies on which to base foraging standards so the best information that was available was applied to all populations. Now in order to change these standards local studies are used. The results of the Beyer et al. study was just one of the local foraging studies used to develop and justify the new foraging guidelines for the Apalachicola RD.

192 - How did the reduction in foraging impact the harvest levels between alternatives?

Response: The results of the change in RCW-foraging standards on timber harvest levels can be found in the FEIS, ``Timber'' section in Chapter 3. Alternative C had reduced foraging with an even-aged emphasis and can be compared with Alternative A, which also had an even-aged emphasis. Alternative B had an uneven-aged emphasis similar to Alternative E, but without reduced foraging. However, RCW foraging is not the only factor that affects timber harvest. Other factors include age class distribution, visual resource management, ecosystem management, and other social values.

192 - Modified Alternative: Provide for harvest of hardwoods & cypress 37 mmcf [million cubic feet].

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

193 - Will a shift away from even-aged management on a large scale have negative repercussions for RCW habitat?

Response: We are not proposing a large scale change when viewed in context. Uneven-aged management is planned for 9 percent of the longleaf and slash pine acres in the next 10 years. There should be no negative effect to RCW populations. See the Biological Assessment for effects of the selected alternative on RCW.

198 - The overall average of 66.5% of the NFs in FL being designated as RCW HMA [habitat management areas] is excessive, 60% would be more than adequate. Converting so much land into RCW habitat seems as if all of the rest of multiple uses for which the forest could be used are being relegated to much lesser items of importance.

Response: RCW HMAs were developed based on the current distribution of RCWs and the amount of habitat needed in the future to meet population objectives. The area designated as RCW HMA is what is estimated to be needed to meet this goal.

217 - The NFs in FL can make plans for the RCW based on guidelines that we have via the Memorandum of Agreement between Georgia Pacific and USFWS.

Response: The decision was made in 1995 on the guidance for management of RCW on the national forests in the Southern Region. We are tiering to that decision with some exceptions through consultation with the U.S. Fish and Wildlife Service.

227, 229 - There are also no standards and guidelines pertaining to the use of inserts for management of RCW nesting habitat, and no discussion on whether the forests will be managed for nesting habitat without reliance on inserts. Request that this section be revised to address these important issues.

Response: The use of inserts is discussed in the Region 8 RCW EIS. The national forests in Florida will follow these standards and guidelines.

232 - We support the reduction in foraging area requirements as recommended by experts in the U.S. Fish and Wildlife Service from the current 6350 stems per cluster to 4100 stems per cluster (WL-1).

Response: Thank you for your support.

103 - FWS has encouraged development of population-specific and/or regional foraging standards based on research that quantifies and/or qualifies the relationships between RCW group and population health and foraging substrate, adequate information and evaluation must be presented to justify modifications to the existing standards.

104 - Update, in consultation with the USFWS, the guidelines for managing RCW habitat.

104 - For all stands, even- or uneven-age, consultation with the USFWS is required if proposed harvesting will reduce the stem density below variable limits and these guidelines may be applicable to all NFs in FL.

124 - You ask for reductions from RCW foraging guidelines as stated in the ROD, Final EIS for the Apalachicola RD. You don't say what the current guidelines are. What is the justification for the reduction? I'd like to read in the report how these new numbers were derived.

124, 157 - You proposed reductions from RCW foraging guidelines as stated in the ROD, Final EIS for the Apalachicola RD. You don't say what the current guidelines are. What is the justification for the reduction? We are not objecting to it, but the plan should say how these new numbers were derived.

156, 203 - RCW foraging requirements should be based all on peer-reviewed research and apply to all ranger districts.

192 - The Council asks that the FS initiate consultation with the U.S. Fish and Wildlife Service to secure modification of the existing guidelines on the NFs in FL to bring them into conformity with this pertinent information.

192, 193 - Recommends that a modified Alternative include a monitoring requirement to initiate consultation with the USFWS to secure modification of existing guidelines on the NFs in FL to bring them into conformity with pertinent research.

193 - Recommends that the Forest Service initiate consultation with the USFWS for the purpose of securing modification of the existing guidelines on the NFs in FL to bring them into conformity with pertinent research.

203 - Modify the RCW guidelines.

227, 229 - Plan, page 3-25, Standards WL-1 & WL-2: There is no discussion in either the draft plan or DEIS of the need or justification for these deviations. Rationale for these deviations should be discussed.

Response: The Forest Service must consult with the U.S. Fish and Wildlife Service for any project that will reduce the foraging habitat for RCWs below the standard set in the Region 8 RCW EIS. However, *National Forests in Florida* is proposing reduced standards for foraging habitat on the Apalachicola RD based on several current published studies. Once in place these new foraging standards will allow the Forest Service to reduce foraging habitat to the level prescribed. Only if the Forest Service proposes to go below these standards will we have to consult with the U.S. Fish and Wildlife Service.

104 - Support the Florida Cooperative RCW Recovery Program under which forest industry will join with the environmental community and other cooperators in funding the installation of artificial RCW cavities at a level proportional to the volume of sawtimber harvested from national forest land.

160 - Your formal endorsement in the plan of the RCW Cooperative Recovery Program (attachment ``Coop. Recovery'') would be useful in securing the participation of the local environmental community and of national philanthropic organizations in that program.

Response: This program can be undertaken under the current Forest Plan and under this revision and is a site-specific program outside the scope of the Forest Plan decisions.

104 - Peer-reviewed and published research does not support the foraging guidelines.

192 - An analysis of the basis for RCW constraints and of recent peer-reviewed publications indicates that foraging and rotational constraints now being used for RCW management on the Apalachicola NF, and on other NFs in FL and the southeastern U.S., are not supported by research.

Response: The U.S. Fish and Wildlife Service is in the process of revising the RCW Recovery Plan and foraging habitat will be one of the topics covered. However, the Forest Service has proposed reducing the foraging guidelines for RCW on the Apalachicola RD.

124 - These target objectives seem silly. It would be better to say what measurable target should be achievable in 10-20 years and how we can get there.

124, 157 - Objective 8, to provide increasing habitat capability to support RCWs is fine. If long-term objective for Wakulla RD is to increase RCW population from its current estimated 150 active clusters to 506, how long will it take?

157 - It would be better to say what measurable target should be achievable in 10-20 years and how we can get there.

Response: The RCW population objectives #8 in the draft Forest Plan are long-term objectives that may take decades to reach. The final Forest Plan includes a 10-year population objective for each RCW population.

156 - RCW HMA would encompass 60% of the forests.

192-193 - Modified Alternative: RCW HMA 60% of forest.

198 - On the Osceola NF, 82.5% share of the forest designated for RCW habitat is excessive, wouldn't 60% be more adequate? Do you really need 82.5% of the Osceola NF for woodpecker foraging area?

Response: The RCW HMAs were developed based on the current distribution of RCWs and the amount of habitat needed in the future to meet population objectives. The Osceola NF is designated a recovery population and the long-term goal in the Forest Plan is 457 active clusters. The area designated as RCW HMA is what is estimated to be needed to meet this goal.

192 - Social and economic impacts of RCW restrictions have never been identified, evaluated and considered as required under NEPA of 1969, and most recently, by the U.S. Supreme Court opinion in the case of Bennett v. Spear. The Council requests that the plan discuss this apparent failure to comply with the letter and spirit of NEPA. Specifically we ask that you identify the point in the decision-making process where these effects have been identified and evaluated and to furnish the documentation for evaluation.

193 When additional historical information is included in the EIS, it will be clear that the management of the national forests in Florida is severely impacting the local communities, especially Liberty County, where RCW management impacts have been the greatest.

Response: Socioeconomic effects have been added in the FEIS. See Record of Decision for rationale for the selected alternative. Impacts of RCW management were also addressed in the Region 8 RCW EIS.

Florida Scrub-Jay

88 - Believe the Forest Service should accelerate and expand scrub-jay research on the forest.

Response: This has been added under research needs in the Forest Plan.

88 - The Forest Service needs to be aware that the FWS is in the early stages of revising the Florida Scrub Jay recovery plan, which could affect the guidelines outlined in the current plan.

Response: We are aware of this and will make any changes necessary upon completion of the recovery plan.

88 - In MAs 8.1 and 8.2, the size of the clearcuts are different (8.1 - 320 acres; 8.2 - 160 acres) what was the rationale for these acreages.

Response: The rationale was to increase the current size of clearcuts to closer approximate naturally occurring fire acreages and to allow for utilization by scrub-jay families. The acreages provided a range of maximum sizes to evaluate. Social implications of large clearcuts were considered along with biological factors.

88 - It is critical that clearcuts be close enough to permit scrub-jays to populate the newly created openings, and the word ``adjacent'' used in sections 8.1.3 and 8.2.3 should have a distance specified, for example, within a mile of each other.

Response: This standard has been changed. Adjacent has been changed to contiguous.

88 - Plan, MA 8.4: This MA is the closest alternative to our recommended scrub islands as any other proposal in the plan or alternative presented in the DEIS. We encourage a shorter time period for sand pine removal, not waiting until all sand pine reaches harvest age.

Response: Eighty percent of the area would be cut in the next 10 years. We feel it would not be good stewardship to destroy pine that could be sold at a later date to provide some revenue for the national treasury.

201 - Plan, page 3-21, para. 1: Any decisions on a ``case by case basis'' must still take into consideration landscape- and statewide-level issues if conservation and sustainability are goals.

Response: This standard applies to existing oak scrub stands and local scrub-jay use.

215 - Concerned that the proposed action does not adequately advance the conservation of the threatened Florida scrub jay and other species which are dependent on scrub habitat.

Response: See the Biological Opinion by the U.S. Fish and Wildlife Service and Biological Assessment that responds to your concerns.

215 - Questions the DEIS's cursory discussion of scrub clearcuts and the Florida scrub jay crucial issue.

Response: Additional discussion has been added and scrub-jay is addressed in the Biological Assessment.

215 - Concerned that clearcuts do not adequately mimic the impacts of fire in the scrub community.

Response: Clearcuts are not an exact replication of fire but do provide some similar effects. Many endemic scrub species do very well in clearcuts.

227, 229 - Has the FWS commented on the Plan regarding adequacy of age class distribution for scrub jay?

Response: Yes. See the Biological Opinion by the U.S. Fish and Wildlife Service.

71 - Support expansion and enhancement of RCW and Scrub Jay habitat.

88 - Believe the Forest Service is moving in the right direction in providing large open scrub habitat.

Response: Thank you for your comment.

88 - Recommend the Forest Service establish about 16,000 acres of scrub islands distributed throughout the forest in order to provide secure population centers for scrub jays, as this type of management would be to discourage the growth of sand pine, and maintain open scrub habitat for scrub-jays and other scrub endemics.

195 - Believe a significantly larger portion of the forest should be dedicated to 8.4 Scrub Jay Management Area, a more natural method of forest management.

Response: We believe that with areas such as wilderness, the bombing range, and MA 8.1, there will be more than 20,000 acres of scrub where natural regeneration will be the norm.

88 - DEIS, page 3-54, FORPLAN: Concerned with a statement and graph regarding the scrub-jay and that the model shows habitat indices for the scrub jay will decline over the next 5 decades under all alternatives.

215 - Urges the Forest Service to provide an expanded discussion of the impacts of the proposed action on the scrub jay and other scrub dependent species and revised management actions to address these disturbing trends.

Response: The effects of the preferred alternative on scrub species has been expanded. Additionally, the preferred alternative has been modified to provide a stable or increasing habitat index for the scrub-jay.

Panther

227 - The newly acquired lands on the Pinhook will form a bridge between the two formerly isolated blocks of land. As such the combined acreage will become prime habitat for bear and panther

requiring large unbroken expanses of forested land. Management should then be directed to providing the type of habitat that will enhance the recovery of these and other endangered species.

229 - Newly acquired lands on the Pinhook will form a bridge between the two formerly isolated blocks of land. The combined acreage will become prime habitat for species (bear and panther) requiring large unbroken expanses of forested land. Management should then be directed to providing the type of habitat that will enhance the recovery of these and other endangered species.

Response: Much of this land is within MA 1.1, which has a goal much as you suggested.

Black Bear

227, 229 - Corridors for black bear movement should be included in the Plan, both on the NF and on adjacent lands on a Regional basis.

Response: The movements of a wide-ranging species like black bear make it difficult to identify travel corridors that will be repeatedly used. Also, we feel that corridors within the forest are not needed. Corridors are used to link habitat blocks and the individual forests are more or less continuous blocks of suitable black bear habitat. The issue of bear movement across major roads (county, State, and Federal highways) and regional corridors is outside the scope of the Forest Plan.

227, 229 - Support maintaining blocks of habitat in remote condition - should be ``large blocks." Support acquiring habitat lands.

Response: The Forest Plan has identified eight areas as wilderness areas. There are also many other areas that can be considered remote, including special interest areas, low and moderate recreational development areas, and many of the large blocks of land classified as unsuitable for timber production would meet the condition that many consider remote areas. The Forest Service is pursuing the acquisition of lands as funds and trade opportunities become available.

230 - Pinhook Swamp should not have motorized access.

Response: The access to Pinhook Swamp is limited to the current road system. This will allow access to areas that had been managed for pine pulpwood by the previous landowner and allow for management activities, thinning and burning, that will improve the condition of the area for a wide variety of resource objectives, wildlife, timber, recreation, and ecosystem health. The main body of the ``swamp" will remain roadless.

230 - Plan, LA-2: Add as a priority for acquisition the lands that provide movement corridors for black bear and other wildlife. Add as a priority the lands that provide linkages to other public lands.

Response: Wording to that effect has been added.

230 - Plan, page 3-27: The Ocala and Osceola do not meet the Game Commission's recommended 500,000-acre habitat base needed to sustain a bear population 200 years into Florida's future.

Response: We agree. The current acreage of the Ocala or Osceola NFs does not meet the 500,000 acre size for long-term bear population survival. The Forest Service has a very limited budget for the purchase of lands. However, the total acreage of suitable habitat for bears in the areas surrounding the forests, in addition to the forests, will provide for the long-term survival of black bear populations.

230 - Plan, page 3-27: The Forest Service LRMP does not recognize the impacts of road densities on a wide ranging, shy species like the black bear.

Response: The evaluation of effects from Forest Service management on black bear in the FEIS has been rewritten and improved. The effects of road density on any species is hard to quantify, especially a wide-ranging species like black bear. The numerous types of roads and different use patterns of these roads do not make the effects of all roads equal which adds to the difficulty of the evaluation.

The vast majority of Forest Service roads are low service level dirt roads. No documented roadkill of a black bear has occurred on a Forest Service-maintained road.

230 - Plan, Table 5.1: Bears should be monitored as part of the Monitoring, Evaluation, Research and Implementation proposal.
Response: Black bears have been added as a indicator species to the monitoring plan.

71 - Comprehensive management for the Black Bear has been overlooked.

209 - Improve habitat for the black bear.

Response: We feel that the Forest Plan through its goals, objectives, standards, and guidelines provides well for black bears. Black bears are habitat generalists that range over wide areas. The Forest Plan strives to maintain habitat in a condition that closely resembles the natural conditions in which the forest developed. The national forests provide probably some of the best black bear habitat in Florida. For more information, see the black bear section of the Biological Assessment in the FEIS.

Range

10 - Concerned with the introduction of non native animals and invasive plants into an otherwise pristine forest, if cattle grazing continues to be allowed. The waste products of cattle and the feed used to supplement them is high in potential for the introduction of non native plant species. The hay and straw used for supplemental feeding requirements provides an excellent method of transporting seed and young plants for introduction to an area.

Response: While not stated in the Forest Plan, mitigation measures included in cattle allotment permits include inspecting feedlots and corrals for noxious weeds, restricting cattle brought in from private land to a contained area for 4 days, monitoring allotments for noxious weeds, and assuring that feed for cattle and horses is purchased from local sources that are not contaminated.

41 - Cattle spend a disproportionate amount of time in riparian and wetland habitats, these areas are easily damaged.

Response: Although this might be true at times, we don't see this as a significant problem on the forest. With decreasing numbers of cattle, the potential for impacts also will continue to decrease.

201 - Plan, D-40: This seems like a good application for biodiversity-based indicators developed through measurement of appropriate reference conditions.

Response: Yes, if we had them it would make this monitoring much easier and more meaningful from the start. As it is, it will take time to understand the results.

205 - Supports cattle grazing not permitted in alternative D.

Response: Thank you for your comment.

215 - Questions why the Forest Service is allowing yet another activity which is potentially incompatible with conservation objectives. Sufficient cattle grazing areas exist on private lands throughout Florida, and urges the Forest Service to not allow this activity on forest lands.

Response: Cattle grazing is a legitimate use of national forests. We have added a standard that allows for the gradual phase-out of this use as demand decreases.

227, 229 - There are no forestwide standards and guidelines for range. Regulations at 36 CFR section 219.20(b) require that alternative range management prescriptions ``shall consider," among other things, possible conflict or beneficial interactions with wildlife population and methods for regulating these, and comparative cost efficiency of the prescriptions. Request that these considerations be

evaluated and considered, and appropriate standards and guidelines be included in this section. What little discussion there is on environmental impacts of cattle is scattered throughout the DEIS in the sections on watersheds, vegetation, and wildlife. The environmental impacts of cattle should be consolidated in the environmental consequences subsection of the range section of the DEIS, or at least identified and cross-referenced to the pertinent part of the other sections. There is no analysis or evaluation of possible conflict or beneficial interactions with wildlife population and methods for regulating these and comparative cost efficiency of the prescriptions, as required by 36 CFR section 219.20(b). The statement on page 3-54 ``[t]his low level of grazing would have little effect on wildlife'' is conclusary and fails to provide any qualitative or quantitative analysis of the potential impacts of cattle on the NFF. Request the Forest Service amend the draft Plan to include necessary research to comply with the minimum requirements of 36 CFR section 219.20.

Response: Additional effects have been added in the FEIS. The FEIS ``Affected Environment'' section is organized according to the environment or resource affected. As such, the effects of the range program on other resources are evaluated under those resource areas. The DEIS contained an index which cross-referenced these pages and has been included in the FEIS. There are no requirements that each resource area have standards and guidelines. Most of the direction on the management of the range program is found in the Forest Service Manual and Handbook. We have added a standard for range which provides for a gradual phase-out of the range program if demand continues to decline.

227, 229 - Plan, page 4-43, Standard 7.2-3: Realistically, this is not possible. Keeping cows out of these areas isn't possible.

Response: Some spots will be easier than others. If they are too detrimental then they can be eliminated from the forest.

234 - Plan, page 5-5, Table 5.1: More details needed. What sort of transect? Where is the transect located? How is it located? Why not many transects, randomly located across multiple fence lines? The point is that enough data be collected for statistical assessment of effects. What sort of data are collected along the transect?

Response: Yes, we agree. These details need to be worked out as we develop the individual monitoring tasks.

13 - See no long term benefit from cattle grazing, particularly in the terms of its effect on water and soil quality.

41 - The fee for cattle grazing is so low it would amount to a government handout; therefore, the Forest Service should not support ``welfare cowboys.'' Advancement of the commercial interest of a few ranchers should not take precedence over the protection of the environmental integrity of publicly owned lands. The priority to manage Forest Service lands for wildlife and habitat improvement would conflict with management of lands for cattle grazing.

41 - Livestock grazing can lead to a decrease in native plant and animal species. More plant species in the US are eliminated or threatened by livestock grazing than any single factor. The grazing of cattle and the resulting soil compaction can have long lasting negative impacts on the natural vegetation of an area. Cattle grazing can reduce biodiversity by allowing for an increase in non native plant species due to soil impacts and increase livestock-borne diseases among native wildlife species.

80 - Cattle grazing is destructive and therefore inappropriate and should be eliminated.

84 - Why allow any cattle grazing at all in Florida's NF, when this activity is potentially incompatible with conservation objectives on the NF?

209 - Limit or discontinue grazing on state lands. Many privately owned sites are available throughout the state for grazing.

223 - Phase out grazing and restore range land.

226 - Do not see how the Forest Service can warrant cattle use when such a large amount is available in the private landscapes that surround the forests.

227, 229 - Provisions should be included in the standards which call for a gradual phase-out, over a 10 year period of existing permits; however, it would be acceptable to retain a small herd of heritage (cracker) cattle.

233 - All cattle grazing should cease, as well as the keeping of bees.

Response: The number of cattle on national forest land has been falling during the past 10 years. Guidelines have been included in the Forest Plan to eliminate allotments not utilized in for 5 consecutive years. The area of national forest covered by allotments has been reduced in the preferred alternative.

41 - Maintenance of roads and fences for cattle grazing operations is an unnecessary expense to taxpayers. Construction of fences between Forest Service lands and other publicly owned lands would impact large animal migration.

226 - It is not in the best interests to lease so much land for cattle, as it will entail restrictions for other uses and additional fencing and fragmentation.

Response: The number of allotments, number of cattle, and the miles of fencing all have been reduced during the past 10 years. This trend is likely to continue.

124 - I think you need some research on the impact of cows on the Forest.

157 - Research on the impact of cows on the Forest is needed.

Response: We are also concerned that no significant impacts occur due to cattle. However, it is not a priority for research due to the low impacts resulting so far and the decreasing numbers of cattle projected for the future.

Uneven-Aged Management

41 - Florida cannot afford additional losses of land to inadequate timber practices.

Response: The uneven-aged management strategy proposed in the preferred alternative will be closely monitored and become adaptive as more information is researched and developed.

61 - Is there a scientific basis for a large-scale shift to uneven-aged management for longleaf pine. A change to uneven-aged management should be slow until careful monitoring has revealed the principal benefits and costs.

Response: There are some field trials at the Southeastern Forest Experiment Station for uneven-aged management in longleaf pine. These trials have shown that uneven-aged management can be successfully accomplished in longleaf pine. We have called uneven-aged timber cutting adaptive management, because we will adapt as more research is developed. The proposed cutting method of group selection will thin selective diameter classes and regenerate 1 acre out of every 23 in patches of ¼ to 2 acres in size. If uneven-aged management does not work the stands treated will be able to return to even-aged management.

61 - A commitment to utilize, in perpetuity, less than half the productive capacity of forest land certainly emphasizes the need for recognized compensating values backed by solid scientific evidence.

Response: Under the current guidelines for the recovery of the red-cockaded woodpecker we will be doubling our rotation length, be leaving the oldest one-third of the stands for future cavity trees, and not be regenerating stands until there is less than 8 1/3 percent in each of the age classes between 10 to 30. These restrictions to maintain habitat for the RCW place a severe limit on even-aged management. These same limitations do not apply to uneven-aged management because there is no rotation, the future cavity trees are provided for by maintaining a Dmax, and the forest is not fragmented with large regenerating openings. So the majority of the commitment of the timber resources on the forests are going to provide habitat for the RCW. There maybe a long-term trade-off of forest productivity for maintenance of RCW habitat, at least until a future date when the limitations on even-aged management will be reduced.

61 - Reliable information is needed on all the consequences of multi-aged stand management for this very intolerant species before major irreversible shifts in that direction are made.

Response: A move to uneven-aged management will not cause an irreversible shift in management. The decision being made in the Forest Plan will be implemented for the next 10 to 15 years; then the Forest Plan will be revised.

80 - Uneven-aged management with selective cutting is the way to go.

Response: Comment noted. Thank you for your comment.

124 - If only the flattop trees are left, you will not have many potential cavity trees 50 years from now.

Response: There will be at least 6 trees per acre over 18 inches and more trees between 12 and 18 inches. Most of the cavity trees on the forest currently are in trees less than 18 inches in diameter.

124 - Why not start the uneven aged management at three different levels randomized over area types, leaving different numbers of trees in each age class? In 10 years you would know which method was producing the most timber? With current recommendations you try one method and you will never know whether if you did it differently you might have got a better result?

Response: We intend to apply it in different areas and under different conditions. The standards in the Forest Plan are minimum standards to ensure retention of large trees. The size and design of openings will be varied, as well as stand structure.

124, 157 - This statement is a huge loophole, allowing for great abuse of the intention of group selection management. VG-9 says to retain all relict and flattop longleaf and slash pines, but does not say that these trees should not count in the retention guidelines above.

Response: We do not see this as a loophole, but a practical allowance for those areas that would not have the desired stand structure for regeneration if too many large trees are left. VG-9 also applies to thinning to allow for production of relicts as stands age.

150 - As long as you provide openings of suitable size, my research shows holes of at least 25m in diameter work best, you will get regeneration.

Response: The regeneration hole that will be made for regeneration in longleaf stands under uneven-aged management will be ¼ to 2 acres in size. These openings should be sufficient size to capture regeneration provided the understory is in good condition.

150 - If it take 4-8 years or even 15 years in some stands before everything is favorable for regeneration, so what?

Response: That is correct; one good thing about uneven-aged management is that time is on our side. During the FORPLAN runs we estimated the cutting cycle to be on a 20-year reentry cycle. If regeneration does not occur by that time there always will be the option to plant the openings.

150 - The only areas you could have difficulty getting regeneration is wetter sites with lots of woody understory. It may take a while for prescribed burning to open these areas up enough for regeneration to occur, but it will occur.

Response: True; that is why we have decided to increase the burning cycle on the forests to a 3-year rotation with a gradual shift toward growing-season burning as the fuel loading becomes less.

150 - Any monitoring must take into account this inherent natural variation.

Response: We recognize that it will take many entries using uneven-aged management cutting methods before the stand structure begins to conform to the reversed J-shaped curve and that we may never reach the textbook example because of this variation.

156 - Conduct a test of the uneven-aged technique on a significantly less area than the proposal of 37,500 acres.

Response: Uneven-aged management has been tested on small trial areas in the Escambia Experimental Forest. The cutting method we plan to use for uneven-aged management is group selection. This cutting method is basically a selective diameter class thinning down to a basal area of 50 or 60 square feet. Only 1 acre out of every 23 acres will be regenerated in openings. So even if we do not get regeneration, we have not significantly altered the stand structure or growth rates and the stands can always be converted back to even-aged management.

157 - The production of new flattops should be part of the plan.

Response: VG-9 would allow for the development of flattops by retaining misshapen, poorly formed, and suppressed trees.

163 - Some form of selective tree harvest would appear to favor the aesthetics of the forest experience.

Response: We agree.

192 - The preferred alternative represents a high-risk departure from historic forest management techniques. We consider this departure arbitrary and capricious. This represents an irreversible departure from successful historic even-aged management that has been practiced on Florida's forests for several rotations.

Response: This is not an irreversible action. Uneven-aged management can be easily converted to even-aged management by applying a seed tree, shelterwood, or clearcut harvest to the stand. Even-aged management has been successful in regeneration of pine trees, but not as successful in conserving and regenerating other elements of the forest.

192 - Under preferred Alternative E, forest productivity will be impacted and timber volumes identified will not be met as the yield tables used in the analysis are questionable.

Response: The yield tables have been adjusted. We will monitor the harvest acres and timber outputs to determine the accuracy of our estimates.

192 - Florida NF yield tables are overly optimistic.

Response: We have made adjustments in some of the yield tables.

192 - The future sustainability of the forest types intended are also highly suspect. There is evidence to suggest that these longleaf stands will not be achieved for all sites and additional information to suggest that other forest types will also not be sustained.

Response: We believe the forest types will be sustained. The forest types sustained themselves naturally prior to the advent of human management. A large problem we have now is restoring the off-site slash pine that was regenerated through artificial even-aged regeneration.

192 - A move to uneven-aged management will change the structure of the longleaf pine forests needed to maintain RCW populations. Changing the silvicultural regime in mid-stream could upset what appears to be a successful situation.

Response: We intend to monitor the effects on RCW as we implement uneven-aged management. A study of the first uneven-aged harvest on the forest is already in place. The change in forest structure will be gradual.

192 - Uneven-aged management regime could result in an increased southern pine beetle risk.

Response: There will be a greater risk in all timber management systems due to longer rotations and retention of older trees. An active thinning program may mitigate the situation somewhat.

192 - Some research on irregular shelterwood harvest methods, somewhat similar to that proposed in Alternative E, suggests that the approach will not yield desired RCW habitat.

Response: We plan to implement some irregular shelterwood harvests and monitor the results.

192 - As the barrier to this required operational testing lies in the RCW guidelines, it is imperative that these guidelines be revised to conform with current peer-reviewed published research. Under existing law this requires consultation with the U.S. Fish and Wildlife Service.

Response: We have proposed modifications of some of the guidelines and consulted with the U.S. Fish and Wildlife Service on these changes.

192, 193 - Modified Alternative: Uneven-age Harvest - test on less than 37,500 acres.

Response: We have considered alternatives with varying degrees of uneven-aged management. See Record of Decision for rationale for selected alternative.

193 - Compared to even-aged management, the group selection approach will almost certainly prove more difficult for the Forest Service to effectively and efficiently implement.

Response: We agree that it may be more costly and difficult to implement, but the benefits from an ecosystem management perspective should be greater.

193 - Conditions in an uneven-aged forest (i.e., dense, slow growing, low vigor mid-story) would intuitively seem to favor increased southern pine beetle activity.

Response: The discussion of southern pine beetle in the FEIS notes that all alternatives proposed an older forest, and this could lead to increased incidents of diseases and insects that favor older forests. The uneven-aged system proposed by the Forest Plan emphasizes group selection which will create small openings. Combined with thinnings, this will result in a less dense forest and impede the spread of insect or disease outbreaks.

193 - How well will longleaf regenerate using group selection, especially on dry sandy sites or sites with dense palmetto understory?

Response: This is a good question which we hope to answer as we implement the Forest Plan.

193 - How will slash pine respond to this type of silvicultural system on all sites? How will uneven-aged management lend itself to the use of prescribed fire, especially in slash pine stands?

Response: These are good questions which we hope to answer as we implement the Forest Plan. The application of group selection will be limited in slash pine.

216 - Plan, page 2-5, FWO 6: Urge the Forest Service to consider much more than 35,000 to 38,000 acres for uneven-age management in the next 10 years.

Response: We believe that 30,000 to 33,000 acres is the maximum we can operationally commit and comply with RCW-foraging guidelines.

217 - Uneven-aged management is an unreliable way to regenerate forest lands. Once this type of management is implemented the stand (or forest) becomes even harder to manage and costs per acre increase.

Response: Natural regeneration may be unreliable in any system. There is still the option of planting or artificially seeding an area to provide regeneration. It will require more expertise and coordination in management activities.

217 - How will prescribed fire be used? When will you determine a stand (or unit) is ready for harvest?

Response: Prescribed fire will be used as described under the fire standards and guidelines in Chapter 3 of the Forest Plan. Timber stands will be examined in the field and the current conditions will be compared with DFCs and appropriate harvest prescriptions will be applied.

220 - Uneven-aged management of longleaf and slash pine - Overall, we would prefer to see this approach limited to operational pilot projects until it is better understood through research.

Response: We will implement this management action slowly and use the results to make improvements as we progress.

224 - VG-10: Group Selection harvest sizes on ¼ to 2 acres do not constitute an economically feasible timber production regime.

Response: These are opening sizes and not harvest unit sizes. A group selection harvest may cover an area of several hundred acres. Most of the area would be treated similar to a thinning with occasional openings. We have sold a few of these type sales and they are feasible.

227, 229 - Standard VG-6: Definition is needed of what is meant by ``adequate amount of trees'' to achieve stocking levels.

Response: It is not the intent of the Forest Plan to prescribe every detail of management. The determination of adequate seed trees will be made by a professional forester trained to determine this.

227, 229 - Plan, Standard VG-7: This standard is unintelligible to the general public, and technical terms (e.g., ``D(max)'') are undefined. It should be revised to be understandable, and the note should be cross-referenced to whatever model and assumptions are being referenced. Specific guidance for harvesting rates to be determined by ``site specific analysis'' should be disclosed and discussed.

Response: This standard is intended to give foresters guidance in setting stand structure parameters, which are difficult to translate into layman's terms.

1 - Likes the uneven age harvesting of trees.

11 - Supports the decision for group selection management in longleaf and slash pine areas.

157 - Objective 6 and VG-10: We are extremely pleased that the NFF are leading the way toward uneven-aged management.

208 - Strongly support uneven-aged timber management.

219 - DEIS, pages 3-131 to 3-134: Encourage the adaptive management use of small group selection for longleaf and slash pine and large clearcuts for sand pine, as were advocated in Alternatives B, D & E.

232 - We fully support the use of single tree and group selection logging techniques in longleaf stands. It is very important that some very old longleaf pines be left in every stand.

Response: Thank you for your comment.

104 - Proceed with the testing of the group selection management system on 28,000 acres as an alternative to clearcutting.

192 - Recommend that the Forest Service immediately institute testing of the uneven-aged harvesting (group selection) on a small number of acres. Do not support the untested application of uneven-aged management on 37,500 acres as proposed in Alternative E.

193 - It does not appear that committing 37,500 acres to the imperfectly understood uneven-aged silvicultural system is the correct approach, do not want to risk the sustainability of our NFs on an as-of-yet unproven method of management.

Response: We believe there are substantial ecological grounds for instituting group selection. The only way to determine the viability of the method operationally is on a scale such that it is tested in the context of a wide range of conditions and practices. The first uneven-aged harvest in an even-aged stand is very similar to a thinning and is not irreversible.

120 - Uneven-aged Management of Longleaf and Slash Pine—Agency should proceed with utmost caution. Research does not indicate that acceptable regeneration will occur; however, research does indicate that there will be a large reduction of growth using this method vs. even-age management.

220 - Uneven-aged management of longleaf and slash pine - Overall, we would prefer to see this approach limited to operational pilot projects until it is better understood through research.

Response: We acknowledge that we must proceed with caution and we intend to monitor results carefully. We have modeled the reduced growth in our yields; and if natural regeneration is not adequate, we can interplant with seedlings.

124 - Objective 6 is too vague. Give restrictions. Uneven-aged management can be abused. Would like to see an acknowledgment that caution will be used, even in the goals and objectives.

157 - Objective 6 is too vague. What are the limitations on the density of harvested patches, their average size, and size distributions? On the frequency of re-entry, on the machines used to cut and transport tree? We would like to see an acknowledgment that caution will be used and that safeguards are in place, even in the goals and objectives.

Response: There are standards and guidelines to address your concerns. We do realize we must proceed with caution, and we intend to monitor results carefully.

124, 157 - Plan, VG-8 says that the retention of at least 6 trees per acre larger than 18" may be averaged over the cutting unit. What is a cutting unit?

227, 229 - Standard VG-8: This guideline needs to be clarified by defining the term ``cutting unit," and provide the rationale for allowing the minimum number of large trees left standing (i.e., 6) to be averaged over the ``cutting unit." How does this guideline interrelate with VG-9, which calls for retention of all relict and flattop trees for wildlife habitat? Can these be used to meet the requirement of VG-8?

Response: VG-8 and VG-9 have been changed to VG-11 and VG-12. VG-11 refers to group selection and shelterwood harvest, and the cutting unit is the area within which the harvest occurs. For example: a group selection harvest may be planned for a 50-acre area and there should be at least 300 trees greater than 18 inches left on the area. These trees can include relict and flattop trees, if they are more than 18 inches in diameter.

192 - DEIS does not discuss the risks of an uneven-aged management regime.

193 - Pleased that Alternative E provides for increased pine sawtimber harvests, have serious reservations about the risks involved in placing so great an emphasis on a largely unproven silvicultural system employing group selection in longleaf and slash pine forests.

Response: The application of group selection will be limited in slash pine forests. Risks of uneven-aged management is discussed in the ``Timber'' section of the FEIS.

193 - Group selection has not yet been implemented on a broad forest-wide scale, not all effects of this type of management are understood.

217 - I am surprised you are considering uneven-aged management without any known history or research that has determined this will work.

Response: Small scale tests indicate group selection can work in longleaf pine. We have observed many areas in the forest where small openings have been created and have adequate reproduction to perpetuate the stand.

193 - Most of the literature regarding uneven-aged management seems to indicate a loss in forest productivity averaging around 50% as compared to even-aged systems, this is a huge loss to easily accept and justify, there would have to be some very significant compensating values for this loss, but if they exist, they are not readily apparent.

217 - Implementing uneven-aged management for slash and longleaf will cause a loss of forest productivity that could be as high as 50%. There is also the real probability that uneven-aged management will decrease the slash-longleaf pine type you are trying to improve.

Response: Studies have shown that longleaf pine regeneration experiences reduced early growth under the influence of overstory trees. This has been disclosed in the FEIS. This will affect timber volume productivity and increase productivity of other forest values such as scenery, recreation, and herbaceous species.

Even-Aged Management

104 - With irregular shelterwood or seedtree as the standard method, regenerate no more than 8.3% (for longleaf) or 10.0% (for slash/loblolly) of suitable acres during the current 10 year plan period.

Response: These guidelines were applied for stands within the RCW HMAs, and FORPLAN had the option to apply even or uneven-aged management.

104 - For clearcuts, research indicates a flexible stand size limit of 60 acres. No limit on size is established for stands which are regenerated under a silvicultural system in which a pine overstory is permanently maintained. Regional guidelines restricting addition to the 0-30 year age class acreage or limiting reduction in the oldest third of the acres below rotation age shall not apply to stands which are regenerated under a silvicultural system in which a pine overstory is permanently maintained.

Response: According to the regional guidelines for stand condition classes, stands with less than 30 square feet of basal area per acre are considered sparse and have a high priority for regeneration.

150 - I hope you are not swayed into an alternative that relies more on traditional clear-cutting and shelterwood systems.

Response: Alternative E is the preferred alternative and will utilize both even-aged and uneven-aged management. All cutting methods will be allowed with natural regeneration methods being emphasized where possible.

156, 203 - Conduct even-age harvests on 24,000 acres (Apalachicola - 12,500; Osceola - 8,500; Ocala - 3,000) as this would be based on modification of RCW guidelines.

Response: The amount of treatments are decided in a FORPLAN model based on actual data of what is available. Thank you for your suggestion.

160 - A consideration unexamined is that the use of irregular shelterwood/seedtree would yield most of the benefits of long rotations at considerably lower economic and social cost.

Response: The Core ID Team explored the use of irregular shelterwood in our analysis and determined that the amount of regeneration that would be allowed under current guidelines would severely limit the harvesting of timber on the forests.

192, 193 - Modified Alternative: Even-age Harvest - 12,500 Apalachicola; 8,500 Osceola; 3,000 Ocala.

Response: This alternative is not compatible with the direction concerning age class distributions in the Region 8 RCW EIS.

224 - Plan, VG-6 & VG-7: Even-aged management of pine stands should be considered a viable silvicultural technique and given the same consideration as uneven-aged management where appropriate. Clearcutting should not be completely eliminated or relegated to restoration activity. Reasonable sized clearcuts (50-120 acres) should be employed for timber production.

Response: All silvicultural systems are allowed based on site-specific analysis. Even-aged systems will be limited in application, except for sand pine and longleaf pine restoration.

226 - Efforts to improve existing methods are overwhelmed by continuation of past practices of degrading ecological qualities such as extensive clear cutting and intensive site preparation. Greater work should also be done at restoring areas where current intensive forestry practices are degrading lands.

Response: Clearcutting has been reduced in recent years and is limited in application to sand pine, species restoration, and salvage of destroyed stands. Intensive site preparation also has been very limited in recent years. One priority of the Forest Plan is to replace off-site species and reduce ground-disturbing activities.

227, 229 - Plan, Standard VG-6: Believe discussion of even-aged management needs to be developed further to clarify how the Forest Service intends to implement this practice on the NFs in FL. Specifically there is a need to develop guidelines pertaining to patch size and density, size distribution, and stand entry.

Response: Forestwide standards and guidelines are generally short and concise. Further development of information such as density, patch size, and size distribution are described in the DFCs for particular areas of the forest.

233 - Minimize soil disturbance in clearcuts.

Response: It is a standard policy of the Forest Service to use the least intensive form of site preparation that is necessary to reforest the site.

233 - Limit clearcut size to 10-20 acres, in a regular patchwork quilt pattern, which will greatly increase wildlife biodiversity.

Response: Clearcut sizes are limited in most of the longleaf/slash pine forests within RCW HMAs. Clearcuts would be used for restoration of off-site species and the size is dependent on the existing stand size of off-site species. Sizes of clearcuts on the Ocala NF should be increased to closer approximate natural disturbance patterns.

233 - Increase the years between clearcuts to the maximum politically possible.

Response: Clearcutting will be used mostly for restoration of longleaf pine, which will then be managed under an uneven-aged system or under a 120 year, even-aged system. Clearcutting in the sand pine scrub is scheduled on about a 50-year rotation, based on the growth and mortality of the species.

13 - Clearcutting should be minimized as much as possible on public lands and eventually phased out.

15 - Support any modification of clearcutting policies that will leave trees standing.

171 - Like the restrictions on clear-cutting.

209 - Ban clearcutting practices and replace tree farms with natural forest conditions which mimic native forests.

223 - Eliminate clearcutting and intensive site preparation.

Response: Many of the southern pines are intolerant to the shade of other trees. Clearcutting is a cutting method that allows a lot of light to reach the forest floor where seedlings will be planted. The Forest Service policy on clearcutting is to use this method only where necessary. The Forest Plan allows the use of clearcutting and recommends it in sand pine, and when replacing one species with another.

193 - Our recommendation is to significantly reduce the area devoted to the adaptive management application of uneven-aged silviculture and to manage the area not devoted to uneven-aged management test using a combination of shelterwood, seedtree and clearcut methods. For slash pine on the ANF, this would amount to approximately 12,000 acres regenerated by even-aged systems during the first planning period.

198 - At least 8,000 acres should be set aside for clearcutting in the first period on the Osceola NF. Recommend if you plan to pursue the uneven aged approach, then schedule at least 25,000 acres for clearcutting in longleaf/slash pine because it works.

Response: This amount of even-aged regeneration is not in compliance with the direction for age class distribution within HMAs specified in the Region 8 RCW EIS.

Thinning

124, 157 - How are regulations for the new thinning different from what they were in the past? Will there be thinning in the 10 acre RCW clusters?

Response: There are no new regulations for thinning. The overstocked stands in the forest will continue to be thinned back to between 50 to 70 square feet of basal area as they have in the past.

224 - Plan, VG-20: Approximately 36 percent of the acres harvested in the 10 year plan are harvested using thinning yet this goal does not identify timber production as a purpose for thinning.

Response: It is implied that by releasing overcrowded live crowns and increasing stand growth, timber production would benefit.

227, 229 - FWO 5: This statement is very misleading in that it fails to disclose or acknowledge that the objective will be achieved through extensive thinning of timber in forest stands, without any details regarding the level of thinning or measures to minimize or mitigate damage to ground cover vegetation. There is also no mention of where these thinnings will occur, or how thinning practices

have changed from past practices, or whether thinning will take place within RCW nesting or foraging habitat.

Response: The wording has been changed. Standards in Chapter 3 of the Forest Plan address how thinning will be accomplished along with site-specific analysis.

124 - By ``create conditions that release overcrowded crowns and allow more sunlight on the forest floor'' you mean ``extensive thinning.'' It is hard to find the assurance that this thinning will not be excessive. Because most of it will be on the Apalachicola NF, I am worried about it.

157 - Timber objectives are buried in the list of 17 items and employ vague prose. By ``create conditions that release overcrowded crowns and allow more sunlight on the forest floor'' you mean ``extensive thinning.'' It is hard to find the assurance that this thinning will not be excessive.

206 - Thinning of dense stands should be accomplished by prudent long-term management. Thinning in overstocked stands should be spread out to avoid shocking the ecosystem and the introduction of exotics.

Response: Thinning of overstocked stands is an ongoing process in forest management. Each year as the trees grow the stocking density of the stands increase. Thinning 50,000 acres during the next 10 years is about 5,000 acres per year. These thinnings will be spread out across approximately 1.5 million acres of land and should not hurt the ecosystem.

Silvicultural Practices

1 - Reforestation by natural regeneration makes a lot of sense.

Response: Comment noted. Thank you for your comment.

19 - For the Ocala NF more flexibility to be used in deciding whether a sand pine stand is sufficiently well stocked to not require further silvicultural treatments.

Response: The draft Forest Plan has a standard and guideline that spells out stocking guidelines for sand pine. VG-21 gives 200 and 1,500 trees per acre as the lower and upper levels for sand pine.

88 - Plan, page 4-47, section 8.1-5: At what stocking level does the Forest Service consider the regeneration a failure, requiring artificial seeding?

Response: For sand pine the minimum level of stocking is 200 trees per acre. This can be found in the Forest Plan, forestwide standards and guidelines VG-21, Chapter 3.

88 - Plan, page 4-47, section 8.1-6: Recommend the Forest Service include similar language to that found under subsection 8.2-6 (do not site-prep understocked stands 3 years old and older if scrub jays are present in the stand).

Response: This change has been made.

110 - Recommend that aerial application methods of herbicides not be used. Plan, page 3-20, para. VG-16: Formally prohibit the use of aerial application through the following changes: ``. . . directed or foliar spray. . . . Do not use aerial application methods. Also, do not. . . .''

Response: All aerial applications of pesticides require the approval of the Regional Forester in Atlanta and are only approved after careful study of the alternatives.

124 - Now we will promote natural regeneration in the pinelands. We will do this with fire, not burning in years of major cone crop production, creating openings in the forest with uneven aged management, encouraging the native ground cover. I found these ideas to be strangely missing from the document.

Response: We feel that these concepts are well explained in the Forest Plan and represent a significant change in our management direction.

124 - DEIS, page 3-33: For the distribution of the age classes of pine 50 years from now on the Apalachicola NF, why is the distribution so bimodal? Is this something to worry about?

Response: The ideal age class distribution for any even-aged forest would be an equal number of acres in each age class. Age class distributions are affected by natural disasters and regeneration cutting. When age class distributions have a large variance this has to be taken into consideration when scheduling regeneration cutting, with the goal of evening out the distribution.

124, 157 - How will all these longleaf pines be planted?

Response: The Forest Plan does not make site-specific decisions like exactly how trees will be planted. There are several methods available such as by machine, hand planting, or by seeding. This type of decision is made at the individual project level.

150 - I would suggest for VG-2 that if any chopping is done that the chopper be light enough to only knock down woody material for burning but not heavy enough to penetrate the wood material and cause soil disturbance. A single non-offset drum works best for this.

Response: VG-2 is now VG-5. In the type of conditions VG-5 is describing the woody material is usually so thick that just knocking the titi over creates a solid mat of vegetation over the soil surface which is thick enough to support even a double-drum offset chopper.

150 - Exposed soil - The percent cover of this item will help determine if you are being effective in minimizing soil disturbance in harvesting, site preparation, burning, etc.

Response: Where some exposed bare soil is necessary for the tree seedlings to reach the soil and germinate, percent cover is a very nebulous term and hard to quantify without taking an extensive amount of plots.

157 - Plan, VG-11 & VG-12: These two seem to contradict one another. The first says slash will be distributed, the other says it may be piled to a degree). Why would it ever be ``impractical or undesirable'' to limb trees where they fall?

Response: These two guidelines are very different. VG-11 (VG-14 now) is designed to keep the limbs and debris from being piled up at a limbing gate, while VG-12 (VG-15 now) is designed to make sure that individual piles of limbs or debris are not piled high at the edge of visually sensitive areas.

157 - Plan, VG-17: Trees should never be planted in straight rows, no matter what the location; it should be applied forest-wide.

Response: Machine planting is the tree planting method that has the highest success rate. Unfortunately machine planting causes the plantations to have evenly spaced rows of trees.

206 - Natural regeneration by seed trees should be adopted as the primary method for site restoration in sand pine.

Response: When a site is being restored to a species that is no longer on the site but should be, the only method to achieved restoration is to plant the species desired. If there are enough seed trees of the desired species on the site then natural regeneration can be considered.

227 - Plan, Standard VG-2: Criteria for determining when it is acceptable to chop titi-encroached sites should be developed.

Response: This will be a site-specific decision. The Forest Plan direction is to accomplish the job with the least intensive method possible.

227 - Standard VG-3: Criteria need to be identified for determining the percent of longleaf pine and slash pine in flatwoods.

Response: This would be a site-specific decision.

227 - Plan, page 3-20, Standard VG-17: Urge that this standard be applied forest-wide not just near roads and trails.

Response: Since this is a visual standard, it more appropriately applies within sensitive viewing areas.

227 - Plan, page 3-20, Standard VG-18: Stocking levels should not be based solely on site capability for timber production.

Response: This is not the sole determination for adequate stocking levels, but timber is a resource managed by the Forest Service and funds earmarked for timber production are used in reforestation with an objective for future timber production.

227 - Why is artificial seeding of clearcuts being done? Doesn't this result in denser stands of sand pine & subsequent deleterious effects to other species (many endemics). Artificial seeding, increased stocking and prevention of sparse stands are timber objectives.

Response: Much of the scrub is still suitable for timber production and a minimal level of sand pine stocking is required for future sustained timber yield. In some cases, artificial regeneration results in heavily stocked stands just as natural regeneration does.

227, 229 - Plan, page 4-47, Standard 8.1-5: Delete the language regarding the use of artificial seeding.
Response: This area is still suitable for timber production and a minimal stocking level of sand pine is desired to sustain future timber yields.

227, 229 - Plan, Standard VG-1: Specific guidelines limiting the use of roller chopping as a method of last resort should be included in this standard.

Response: Roller chopping is one of the many tools that are available to the people on the ground. The goal of the Forest Plan is not to take away tools that may be necessary to do the job, but rather to describe the conditions the forest will be in the future (DFCs). It will be the decision maker's role to determine if the right tool is being used to accomplish the desired future condition as specific projects are analyzed.

227, 229 - Plan, Standards VG-11 & VG-12: These guidelines appear to be contradictory and need to be clarified.

Response: VG-11 (VG-14 now) applies to all areas, and VG-12 (VG-15 now) applies to visual sensitive areas.

227, 229 - Plan, page 3-20, Standard VG-15: Request that specific guidelines be developed specifying when chemical or mechanical methods for site preparation may be used.

Response: These are site-specific determinations. This standard has been rewritten.

229 - Plan, Standard VG-34: Add ``PETS surveys should be done before herbicide use."

Response: This is covered under standards found in Region 8 *Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont*.

229 - Plan, page 3-18, Standard VG-2: Criteria for determining when it is acceptable to chop titi-encroached sites should be developed. Page 3-19, Standard VG-3: Criteria need to be identified for determining the percent of longleaf pine and slash pine in flatwoods.

Response: This would be very difficult to do and not necessary since our priority is in areas we know have off-site species.

229 - Standard VG-18: Stocking levels should not be based solely on site capability for timber production.

Response: There are additional considerations addressed such as ecosystem health. The lower level of stocking listed in the standard is very low as far as utilizing sites for timber production.

229 - Standard VG-24: The method for ``protecting" oak scrub stands should be specified.

Response: We believe that the direction to protect is adequate and the choice of methods should be a site-specific decision.

229 - Standard VG-31: Living turkey oak, sand post oak and bluejack oak should not be harvested for firewood.

Response: We see no reason to prohibit this use.

229 - Plan, page 4-47, Standard 8.1-5: Have concern with the statement ``If this fails, use artificial seeding with seed from the general forest area." Care should be taken not to resort to artificial seeding just because stocking rates from natural regeneration are slightly below minimum stocking densities.

Response: We have a responsibility to provide for regeneration of timber sale areas on lands suitable for timber production to provide for a sustained yield of timber in the future. The stocking levels in the Revised Forest Plan allow for flexibility in stocking standards, but some minimum is needed, otherwise we would be deforesting sites rather than reforesting them.

232 - We strongly support the use of prescribed fire as the primary site preparation method (VG-14). Where there is a relatively intact understory, intensive mechanical site preparation techniques and herbicides should be avoided in order to maintain the understory. Standards for the conditions where mechanical site preparation will be used are somewhat vague and should be limited to the minimum amount necessary and to sites where previous activities have already substantially destroyed groundcover diversity.

Response: The guidelines for use of herbicides and mechanical site preparation are found in the *Record of Decision, Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/ Piedmont*.

232 - We support the strategies listed in the section on exotics (VG-34-36), but request that language be added that requires any earthen fill used on the forest be certified free of cogongrass (*Imperata cylindrica*) seed.

Response: We would like it if we could say that to protect the forest from invasive plants, but the State of Florida does not have a certification program or a method of detecting individual plants seeds.

234 - Plan, page 3-20, VG-15: I am not in favor of chemical or mechanical methods of site preparation.

Response: This standard has been rewritten to place a measurable limit on ground disturbance.

13 - Herbicides should be banned permanently and immediately on all Forest Service lands.

233 - Stop all use of pesticides and herbicides other than for the elimination of exotics and insect pandemics such as the Southern Pine Beetle.

Response: Pesticide use will be allowed on the forests. Pesticides are one of the many tools that are available to the people on the ground. The goal of the Forest Plan is not to take away tools that may be necessary to do the job, but rather to describe the conditions the forest will be in the future (DFCs). It will be the decision maker's role to determine if the right tool is being used to accomplish the DFC as specific projects are analyzed.

124, 157 - Plan, VG-15 says chemical and mechanical methods can be used in site preparation. Are there no restrictions on plowing the land? It should either not be plowed or plowed very shallowly.

157 - Considering the damage done by plowing in the past, we urge very strong safeguards that plowing will be used only in the most restricted, specified circumstances.

227, 229 - Plan, Standard VG-15: Should state that ``the use of chemical and mechanical methods will be minimal." The 2nd sentence should be revised to state: ``. . . wiregrass and similar native grasses such as sporabolus." The reference to ``wiregrass" should be changed to ``native ground cover."

234 - The condition that ``wiregrass mortality be minimized" is too ambiguous. I would favor some absolute threshold, e.g., ``wiregrass cover and density will not be reduced below 90% of pretreatment levels."

Response: This standard has been rewritten.

219 - DEIS, pages 3-131 to 3-134: Supports any silvicultural system and tree regeneration method necessary, based on site specific requirements and sound ecosystem management needs.

223 - Rely on natural regeneration of vegetation.

Response: Comment noted. Thank you for your comment.

227 - Plan, page 3-20, Standard VG-13: Restate as follows: ``Species native to the site will be regenerated."
229 - VG-13: Restate as ``Species native to the site will be regenerated."

Response: We feel the wording is adequate as written. In natural regeneration, some species not native to the site may encroach, even when we try to exclude them.

227 - Plan, page 3-20, Standard VG-14: Support this standard.

229 - Standard VG-14: Support this standard.

Response: Thank you for your comment.

Timber Policy

7 - No objection to fuel wood harvesting in areas invaded by laurel oak, as there is very little ground cover left to carry a fire. Harvesting the medium sized and large turkey oaks will have a strongly negative impact on wildlife. Since the large turkey oaks have already been removed to benefit the RCW, why remove more when prescribed fire can thin the rest. Object to stands of longleaf pine and turkey oak that are designated for fuel wood harvest, as these stands can be burned successfully maintaining a healthy ground cover. Using both prescribed fire and herbicides is that there will be too few sandhill endemic oaks for optimum wildlife habitat values in the future.

Response: The Forest Plan allows for fuelwood harvesting of turkey oaks, but we do not anticipate any large scale removals. These issues are best addressed during site-specific project analysis.

14 - Optimize the sale of timber products consistent with sound silvicultural and ecological principles.

Response: Timber harvest from the national forests was optimized, after providing for the needs of other resources.

26 - Forest Service is not making adequate returns for timber harvest.

Response: The Forest Service sells timber under competitive bid and sells timber at or above appraised value for the market area.

26 - Confused over statistics regarding land suitable for timber harvest.

Response: One of the decisions in the Forest Plan is determining the land suitable for timber production. The process is explained in Appendix B of the FEIS. Approximately half the land on the national forests in Florida is classified as suitable for timber production. Much more land is capable of producing timber, but the acres of suitable land are those which are managed for a sustainable yield of timber over the planning horizon.

41 - The amount of timber available is not needed at the present time.

Response: There is a need for timber and forest products based on consumer demand. The United States is a net importer of timber.

41 - There is not enough specific and technical information to review the environmental impacts associated with the proposed harvesting of trees.

Response: The environmental effects of harvesting on plants and wildlife were disclosed in the DEIS. The effects on a particular area of the forest will be considered when individual projects are analyzed.

70 - Protect the RCW and suitable old growth habitat, but not to the detriment of harvest levels.

Response: We believe that these resources can be managed along with timber production, but not at production levels prior to the Endangered Species Act and the concern for old growth.

70 - Provide for increased harvest levels and a dependable timber and forest fiber supply.
Response: The Forest Plan provides for a slight increase in the average annual harvest compared to the past 5 years.

71 - Support minimizing the disturbance of understory whenever logging or replanting an area.

Response: Comment noted. Thank you for your comment.

80 - Timbering/logging fees be geared to the average rate private landowners in the area are charged, if new roads are required, logging co. should pay entire cost of construction & maintenance, and logging company should pay a pro rata share of the cost of using an already established forest road.

Response: Timber sales are sold competitively, and the minimum bid is determined by the local market. Roads are a capitol investment which are used for many other purposes than for timber sales. Timber companies do pay road maintenance fees on roads used for timber removal. The timber sale regulations are outside the scope of decisions made in the Forest Plan.

80 - Do not see 3.9 MMCF for the Apalachicola NF as sustainable.

Response: This should be easily sustainable as it is only a small portion of the current and projected growth of the forest.

104 - Develop preferred silvicultural practices and, using Florida Best Management Practices, install at least one experimental sale in the riverine hardwood timber types to be used as a research tool for evaluating the environmental and socio-economic impacts of hardwood harvesting.

Response: An administrative study can accomplish your request, even if the bottomland hardwoods are unsuitable for timber production. The Best Management Practices (BMPs) that are in place should be sufficient to protect the resources.

104 - Recalculate all estimates of predicted timber yields on the basis of actual sales experience figures and ``on-the-ground'' inspection.

Response: We have reviewed our timber yield tables and adjusted the some of the tables based on recent sales.

123 - The use of 100 year rotation for Slash pine and a 120 rotation for Longleaf pine may result in a product that has very limited demand in the future - particularly in Florida. The long term outlook for this market segment is a steady progression downward, and should consider timber marketability as one element when developing rotation ages on NFs in FL.

Response: These rotations are not determined solely by timber production objectives and include consideration for biodiversity and scenic resources. We feel there always will be a market for high-quality, large sawtimber and poles.

124 - If forestwide goal is production of timber and other harvestable resources, what is meant by ``a philosophy of service in the management of forest resources.'' Goal 1 should be more explicit (LMP 2-3).

Response: The service goal means that whether we are managing timber, wildlife, recreation, range, or water, we are public servants in those endeavors and serve public needs and values in that management.

124, 157 - Timber harvest should be mentioned in Preface, rather than oblique references to being productive and sustainable. The Plan should also say that you want the forest to be in better shape 10 years from now than it is today, and you will measure the differences in quantitative terms.

Response: We believe the wording is adequate as written. The monitoring plan provides for answering the question of how better off the forest will be in 10 years.

145 - The wilderness area and wild & scenic river designations should be used to protect as much land as possible without undue impact on the timber industry.
Response: The addition of wilderness areas comes from wilderness study areas that are already unsuitable for timber production and the wild and scenic river corridors go through many existing wilderness areas and do not reduce the suitable timber base significantly on the forest.

152 - Recommend a complete cessation of harvesting the existing virgin longleaf pines, including fallen timber.

Response: The national forests are mandated by law to produce an even flow of timber through time by the Multiple-Use Sustained-Yield Act, National Forest Management Act, and Organic Act of 1897.

152 - Concerned about the harvesting of 35,000 to 38,000 acres of slash pine and longleaf pine, is this old growth, do not recommend it for longleaf.

Response: There is very little existing old growth on the forest. This harvest is a group selection cut, which is similar to a thinning with small opening created for regeneration. Most of the stands receiving this type of cut would be between 55 and 75 years old. About 15-20 percent of the trees would be removed in such a harvest.

152 - Slash pine could be harvested, with this be commercial and then returned to its natural diversity.

Response: We do plan to harvest off-site slash pine and replace it with longleaf pine where appropriate. In group selection and thinnings, we will favor longleaf pine and remove slash pine on appropriate sites.

160 - Perhaps the strongest case against long rotations (and a 100 year rotation for slash is very long for Florida sites) is the question of forest health. The attached extract from the Forest Service May 1986 publication, ``Long-term strategies and research needs for managing Southern forest to reduce southern pine beetle impacts'' will help the ID team evaluate this question.

Response: Thank you for your comments and attachments. We are willing to accept the trade-offs associated with longer rotations. The benefits of ecosystem management, better sawtimber products, more cavity-nesting bird habitat, and others are worth dealing with increased southern pine beetle activity.

160 - NF planning must consider the impacts of timber non-harvesting on national balance of trade, national deficit and a balanced budget, its affect on the ecosystem of other nations where timber will be harvested to replace our non-harvests, sustainability, energy-intensiveness and cost of non-renewable timber substitutes.

Response: This is considered in the national Resources Planning Act (RPA) and updated every 5 years. These concerns are incorporated by reference in the FEIS.

192 - The AMS failed to identify the softwood poletimber supply and demand, as this has always been an important part of the supply from Florida's National Forest.

Response: A discussion of poletimber supply/demand has been added to the Analysis of the Management Situation.

198 - Would like to see some of the more remote areas of the Osceola NF in the NW corner (not Pinhook) be designated for more industrial type forestry.

Response: Thank you for your comment. The national forests are managed with different goals than industrial forests.

206 - Wetland stump removal and bottom harvests should be eliminated completely.

Response: Stump removal only will be allowed during an administrative study and would not be allowed in wetlands. In Alternatives B and E bottomland hardwoods are unsuitable for timber management.

209 - Notice severe bias towards the timber industry in prioritizing their requests for timber production. Alternatives were vague, with minimal differentiation between plans; favoring timber interests over biodiversity.

Response: Timber production has declined on the national forests in the past 10 years (*see* the ``Timber'' section of the FEIS). Slightly more than 50 percent of the national forests lands in Florida are suitable for timber production. The allowable sale quantity for the Forest Plan is lower than the previous Forest Plan. Hardwood stands will not be managed for timber production. This does not lead to an assumption of favoring timber interests.

209 - Regenerate secondary forests and prohibit commercial logging on the few tracts of virgin forest.

Response: We do not have any knowledge of virgin pine forests. See the discussion on old growth in the ``Vegetation'' section of the FEIS.

216 - DEIS, page 2-1, last para., 3rd sentence: Should read, ``Most stands of longleaf pine and other natural timber types will contain a variety of ages, sizes, and densities of trees.''

Response: Thank you for your comment. We believe the wording is adequate as written.

220 - Additionally, one senses the plan is designed to move the forests to ``old-growth'' status. If this age preference has some rationale, it should be stated in the plan.

Response: See Record of Decision for rationale for the selected alternative.

224 - VG-9: This is a wildlife habitat goal not a timber production goal. Some reasonable percentage of relict and flattop pines should be retained by not all of them.

Response: This is a wildlife habitat and biodiversity standard. It is placed in the ``Timber'' section because that is where it will be applied. We believe all relics should be retained since there are so few left on the forest and in the pine ecosystems of Florida.

224 - VG-11 & VG-12: Requiring that slash, tops and logging debris be distributed across the site and be piled no more than 2 feet high are unreasonable conditions to place on a logger in the context of feasible timber production regime.

Response: This is a practice that has been required on many sales in the past and has not hampered timber production or led to a lowering of sale prices.

224 - VG-13: During regeneration favoring species that are native to the site is a sound policy. However, the wholesale replacement of slash pine with longleaf pine is not consistent with this policy.

Response: We are not proposing to replace all slash pine with longleaf pine. We have estimated the area of off-site slash pine based on soil type and the objective is to restore 10,000-15,000 acres during the next 10 years. There are currently more than 265,000 acres of slash pine on the forests.

224 - VG-23 & VG-24: Leaving snags and oak scrub stands are wildlife habitat goals not timber production goals.

Response: That is true. These standards and guidelines are found under this section because that is where they will be applied to benefit other resource objectives.

224 - VG-26: A timber sales program with an allowable harvest level of 86.1 MMCF of timber over the 10-year planning period does not constitute a viable timber production regime.

Response: This figure has been updated. This is a viable program, very near the past 10 year total sale of 101.7 MMCF.

224 - VG-26: There should be certain areas designated for timber production where these policies are relaxed in order to achieve some reasonable timber production levels. These areas should also allow application of more intensive silvicultural techniques.
Response: Silvicultural techniques are selected based on site-specific analysis. The Forest Plan provides guidance to use less intensive methods of timber production and use a lighter touch on the land.

224 - VG-27 & VG-28: These are scenery management goals not timber production goals.

Response: We agree. Standards have been placed under the area they will apply and not under the resource they are designed to protect.

224 - 7.0 Longleaf and Slash Pine Adaptive Management: We object to the policies set forth for management of longleaf pine and slash pine on the basis that there is no allowance for silvicultural techniques that provide for economically feasible timber production.

Response: All silvicultural systems are allowed based on site-specific analysis. Even-aged systems will be limited in application except for sand pine and longleaf pine restoration.

224 - State of the art silvicultural techniques with the objective of maximizing timber production should be included in the management of longleaf and slash pine stands where appropriate.

Response: All silvicultural systems are allowed based on site-specific analysis. Maximizing timber production is not a goal of the Forest Plan.

224 - The Proposed Revised LRMP (Alternative E) contains no ``real" timber production component. Timber production in the proposed plan is limited only to ``restoration" and wildlife habitat enhancement activities. The Forest Plan seems to be inconsistent with the Organic Act of 1897, Multiple-Use Sustained-Yield Act of 1960 and National Forest Management Act of 1976. Forestwide goals and forestwide objectives: There are no goals or objectives that specifically address ``timber production" as a desirable land use.

Response: Goal 5 includes promoting sustainable use of renewable resources. Timber production is a part of this goal. The DFC states that ``the forests continue to produce large, quality pine sawtimber products." There are objectives for thinning and regenerating pine stands which provide timber outputs. In Chapter 3, there is a standard that defines the allowable sale quantity.

226 - The Forest Service proposes to cut stands of longleaf in all of the NFs in FL including the Ocala; would hope that further restoration would be in the best interest rather than cutting these lands, even selectively. The Forest Service will consider protecting rather than cutting the Ocala longleaf and also give areas like the longleaf on the Ocala a protection status, and prevent cutting.

Response: We believe the longleaf pine ecosystem can be sustained and expanded through carefully planned and implemented harvests and regeneration.

226 - It would be better to selectively cut tree farms where biodiversity is low, and tree densities too high to have even minimal recreational values; whereas, the policy of cutting second and third growth stands that reseeded naturally is not acceptable as presented in the plan.

Response: We plan to selectively cut in plantations as well as natural stands.

226 - The production of quality forest should be the priority not producing raw materials. By focusing primarily on resource extraction instead of non-consumptive uses the Forest Service is destroying its greatest potential market and greatly reducing the supply of supporters of the Forest Service.

Response: The Forest Service does not see the production of quality forests and production of raw materials as mutually exclusive. The Forest Plan is a step toward demonstrating this by producing raw materials in an ecologically sound manner.

227 - Plan, page 3-29, Standard VG-29 per VG-25: Sand pine should be harvested in July, August, and September when possible to increase the likelihood that the site will regenerate naturally.

Response: Limiting harvesting to 3 months out of 12 months forestwide would not be a practical standard to apply.

227, 229 - Concerned about the reference to longleaf and slash pine forests that will be ``more homogenous such that one or two ages are found." This statement seems to indicate that clearcutting in longleaf and slash will be a significant and accepted management practice in the future. Request that the statement ``more homogenous. . ." be eliminated.

Response: Clearcutting will apply to restoring off-site longleaf pine in slash pine plantations. Two-aged stands will result to irregular shelterwood harvests. During the next 10 years, about 12,000 acres of longleaf pine restoration, 2,000 acres of irregular shelterwood, and 30,000 acres of group selection harvests are planned in this type.

227, 229 - With the exception of the objectives of restoring off-site species (3,7), thinnings (5), and initiating uneven-aged management (6), there are no statements describing other objectives for timber harvesting. Are we to assume that there are no other objectives for timber harvesting on the NFF? How much even-aged management will occur, where will it occur, and what method will be used? Objectives for even-aged management should be included in this section.

Response: There are objectives for regenerating 40,000 acres of sand pine with even-aged management, and objectives have been added for irregular shelterwood harvests.

227, 229 - Plan, page 3-21: The sand pine genetic ``improvement'' program should be discontinued, including the seed orchard. No ``genetically-improved'' sand pine should be used on the NF, only wild stock.

Response: All seed used in the seed orchard is gathered from naturally-occurring trees on the forest.

227, 229 - Plan, page 3-21: Any known introduction of Choctawhatchee stock should be removed. Only indigenous Ocala sand pine should be planted on this NF.

Response: We agree.

227, 229 - Plan, page 4-7, Standard 0.1-17: Allows ``cutting of trees for other resource objectives.'' This should be clarified as to when, where and under what circumstances it would be OK in Wilderness.

Response: This would be determined in site-specific analysis. Generally, this may involve cutting trees for hazard reduction, threatened and endangered species protection, or ecosystem restoration.

227, 229 - Plan, page 4-37: The goal for MA 5.1 should eliminate language which allows commercial harvest of pine islands and ridges and along margins.

Response: This management area contains several acres of pine stands scattered throughout that are on very productive sites for timber production and can be reasonably managed for timber. Some of these stands are heavily stocked and need to be thinned.

230 - VG-14: Use prescribed fire as the preferred method of site preparation on all timber harvest sites including scrub.

Response: This would not be practical in sand pine. After a clearcut regeneration harvest, there may be adequate natural regeneration to perpetuate the stand. Burning the site would destroy most of this regeneration.

230 - We suggest that areas be designated for harvest in each forest, that the Forest Service establish a protocol to monitor harvests and set maximum harvest quantities.

Response: The Forest Plan provides for areas that are suitable for timber production; and objectives provide direction for acres of harvest for the planning period. The harvest quantity is limited by a standard in the Forest Plan. Appendix F of the Forest Plan gives the probable outputs by forest. Exactly when, where, and how stands are harvested are determined by a site-specific analysis.

230 - Plan, page 4-36, Commercial harvest of pines on islands is unacceptable as these are often remote islands depended upon by bear, deer, etc. in periods of flooding as resting, denning and feeding areas.
Response: Any harvesting of these areas would be decided in a site-specific analysis considering all resource conditions and needs. Commercial timber harvesting can occur without detrimental effects to wildlife; and in many cases, such as thinning, it can provide beneficial effects.

233 - All timber harvest should cease in these forests, including dead trees and all other forms of economic plant culling. The cutting of trees for profit must cease on public lands.

Response: Managing the forest for timber production is a mission of the Forest Service established by law and policy.

13 - All cypress and hardwoods should be protected in the forests.

205 - Supports hardwood and cypress unsuitable for timber production in alternative D.

206 - Cypress and hardwood removal should cease.

221 - Among the recommendations our organization supports are classifying the hardwood and the cypress trees as unsuitable for harvest.

227, 229 - Support the prohibition of harvesting hardwoods and cypress in wetland and riparian areas.

230 - VG-5: We support the exclusion of hardwood/cypress communities or inclusions to timber harvest.

233 - Stop all harvesting of timber from bottomland hardwood forests.

Response: In Alternatives B and E, bottomland hardwoods are unsuitable for timber management.

19 - Suggest that each of the three NFs set aside some areas to manage for old growth.

63 - Save all old growth.

223 - Protect remaining stands of virgin trees.

Response: The Forest Plan will adhere to Region 8 old-growth policy. Objectives and standards for old growth have been added.

70 - Treat cypress and bottom land hardwood as a fiber resource and an integral part of your program.

120 - Cypress/Hardwood Management—Agency should manage these forest in a way that would be suitable for timber production. ``Unsuitable for timber production'' should be deleted from the plan. In Florida there are markets for these species and there are also areas on the NFs that they can be grown, harvested, and regenerated in an acceptable manner.

155 - Encourage the inclusion in the plan of a consideration for hardwood and cypress harvesting.

192 - Under Alternative E, hardwood acres would be designated as ``not appropriate'' for timber management and no harvest is scheduled for hardwood, there is no rationale for this decision. The hardwood component was included in the available timberland base in the previous plan and it should be available for timber management in this plan. The Forest Service failed to analyze the hardwood market in the timber supply and demand nor the AMS. The FS must look at the hardwood market, analyze the situation, and should consider Timber Mart South. If the Forest Service wanted to remove hardwood lands from the ``suitable timber base,'' then it has a responsibility to explain the rationale behind the proposed change and available for comment.

193 - The Forest Service must realize that over the past several years that demand for hardwoods has increased dramatically, and that the importance of the hardwood market must now be recognized. Recommends that the Forest Service does not contribute to the theory that ``no management is good management'' by eliminating its own ability to manage its hardwood and cypress resource effectively. Disappointed with the position taken by the Forest Service in the draft Plan that classifies hardwood and cypress areas as ``unsuitable for timber production,'' and are quite surprised that the Forest Service is so willing to remove its ability to harvest in these areas from its ``bag'' of forest management tools, and for no compelling reason. Have heard water quality issues cited as a concern, but since the NFs in FL utilize silvicultural Best Management Practices of Florida, this is not a real problem. And considering the Forest Service also augments the standard BMPs with certain enhancements, such as designating the primary ``Special Management Zone'' adjacent to water bodies as a ``no-cut'' zone, we cannot accept water quality issues as a valid reason to eliminate cypress and hardwood harvests.

198 - There is no reason why some of the cypress/hardwood available on the National Forests can't be harvested.

217 - Cypress and hardwood must be treated as an integral part of the NFs in FL management plans. There is no reason to classify cypress and hardwood as unsuitable for timber production. The markets for cypress and hardwood are readily available that would pay more than the costs associated with a management plan. The Florida Dept. of Agriculture and Consumer Services published ``Silviculture Best Management Practices." The Forest Service using the same BMP Manual can harvest cypress and hardwood in wetlands.

220 - There may be occasions where Forest Service managers see a need to conduct some hardwood or cypress harvesting. It shouldn't be ruled out.

224 - VG-5: The hardwood and cypress resource should be managed responsibly using proven, ecologically sound silvicultural techniques.

224 - 5.0 Hardwood/Cypress Forest: We object to a policy of no management of the hardwood and cypress resource.

Response: At this time, the hardwood/cypress is more valuable for other values such as for recreation, wildlife, scenery, and conservation of biological diversity. See Record of Decision for rationale for the selected alternative.

84 - Disappointed to see all the alternatives opened up the longleaf pine sandhill ``island" to timber harvesting of any kind.

215 - Strongly urges the Forest Service to not allow timber cutting on longleaf pine sandhill islands.

Response: Timber harvests are a viable management tool for ecosystem management and restoration. Also, providing a sustained yield of timber is a vital portion of the Forest Service mission.

124 - Could not find how much standing timber there is in the timberlands or how much is expected to occur after 10 years. Need estimates of the rate of growth of the timber volume and some comparisons with harvest rates in the 1980s, when forests were overharvested. According to superintendent of Liberty County schools, the Apalachicola NF harvest 1% of its net annual sawtimber growth. Is that right? Is it for the period of the interim guidelines?

157 - There is no information on how much standing timber there is in the timberlands or how much is expected to occur after 10 years. Need estimates of the rate of growth of the timber volume and some comparisons with harvest rates in the 1980s, when forests were overharvested. According to superintendent of Liberty County schools, the ANF harvest 1% of its net annual sawtimber growth. Is that right? Is it for the period of the interim guidelines?

160 - Any plan for managing a forest must include some estimate of the forest's most important component: the trees. The plan includes no description of the timber you will manage; how much is being grown (current annual increment), where its located, what is its size and quality. How can you tell how much you can cut if you don't know what you have and how much you're growing?

Response: This information has been added to the FEIS in the ``Timber" section.

156 - Hardwood/Cypress harvest on 15,421 acres.

192, 193 - Modified Alternative: Hardwood Harvest - 15,421 acres.

Response: We considered this in Alternative C. See Record of Decision for rationale for selected alternative.

156 - Establish an ASQ [allowable sale quantity] of 125 MMCF over the first planning period (sawtimber - 34 MMCF; roundwood 54 MMCF; hardwood ST 37 MMCF).

192, 193 - Modified Alternative: ASQ - Over 10 years, pine ST 34 mmcf; hardwood ST 37 mmcf; pine roundwood 54 mmcf.

Response: We considered an alternative with similar outputs. See Record of Decision for rationale for the selected alternative.

156 - Sand Pine harvest on 41,000 acres.

192, 193 - Modified Alternative: Sand Pine Harvest - 41,000 acres.

Response: The preferred alternative proposes 40,000 acres of sand pine harvest.

156, 203 - Adopt a rotation age of 80 years for longleaf and 60 years for slash.

193 - The stated rotation ages for slash pine (100 years) and longleaf pine (120 years) seems arbitrary, with no strong basis for selection. We are interested in seeing further justification for the decision to adopt such long rotations.

Response: The rotations for longleaf and slash pine are set by the Region 8 RCW EIS. The rationale for longer rotations is to provide trees of sufficient size and age to become nesting trees. As the tree gets older the chance of red heart disease increases. Research has shown that trees with red heart disease frequently are used by the RCW for nesting habitat.

160 - Suggest that, with the planned use of irregular shelterwood and giving balanced consideration to all concerned, 60 or 70 years would be an appropriate rotation for slash and loblolly pine on the National Forests in Florida.

193 - Modified Alternative: Rotation Ages - 80 years for longleaf pine, 60 years for slash pine. Also change the rotation ages to 60 for slash and 80 for longleaf.

Response: These rotations do not comply with the minimum rotation ages of 120 years and 100 years in RCW HMAs specified by the Regional RCW guidelines.

160 - The 100 year rotation used in the draft plan seems to have no basis except that this is the age when slash pine ``matures" in the Southeast US; a more supportable determination based on forest health, Florida sites, economic impacts and other considerations is requested. The adoption of a 100 year rotation for slash and loblolly pine apparently responds to the regional standard established in Table 2-E7 in the 1995 RCW EIS without considering the discussion of slash pine longevity which appears on page 62 of that EIS. The plan's 100 year slash rotation is not supported by any analysis of environmental, economic or social impacts.

217 - The rotation ages for slash pine (100 years) and longleaf pine (120 years), are much too long. These rotation ages along with uneven-aged management will cause harvesting cycles to be greater than 100 and 120 years.

Response: The rotation ages were developed and effects analyzed and disclosed in the Region 8 RCW EIS.

219 - DEIS, page 3-27: Please that longleaf pine and slash pine will be increased to 120 and 100 year rotations respectively.

219 - DEIS, page 3-128: Support the longer tree rotations explained for various alternatives.

223 - Protect regenerated forests.

224 - VG-14 through VG-19: We specifically object to the policy which prohibits fertilization for timber production.

227 - Plan, Standard VG-9: Support this standard.

230 - We support the retention of snags in a sand pine salvage.

Response: Thank you for your comment.

227, 229 - Plan, page 3-22: Generally prefer that no salvage be done. Snags are subject to windthrow. Groups of snags should be left.

227, 229 - Insect and disease control, this proposal, would establish a Forest Service decision-making process that precludes site-specific public involvement. The final plan should state that general forest-wide salvage logging is not allowed.

Response: The Forest Plan does limit salvage in some management areas. Salvage logging is a tool that is needed in many cases to facilitate regeneration of the site following certain events. Notice and comment periods will be available in most cases, except for small spots that may be categorically excluded.

227, 229 - Plan, page 4-19, Standard 2.1-8: Revise ``Trees may be cut for other resource objectives." to the following: ``Trees may be harvested to help accomplish the goal(s) for which the area was established."

227, 229 - Plan, page 4-30, Standard 4.2-8: The second sentence should be revised to say: ``trees may be cut only to help achieve the desired future condition of the area."

Response: Thank you for your comment. We believe the standard is adequate as written.

227 - Standard VG-9: Support this standard.

230 - We support the retention of snags in a sand pine salvage.

Response: Thank you for your comment.

Forest Products

84 - Should promote valuable and potentially renewable and compatible resource harvesting activities such as palmetto berrying on predominantly on private lands.

Response: While these activities undoubtedly occur on private lands, it is appropriate that they occur on public national forest lands. These activities are some of the many multiple uses that we manage on the national forests; we do not have the resources to promote private lands for these activities.

155 - Improvement in harvesting techniques and equipment along with the adoption of BMPs has enabled the stumpwood industry to become much more environmental friendly.

Response: These new techniques and harvesting equipment could be demonstrated in an administrative study.

192 - The AMS failed to analyze the role of lightered wood (distillate wood) or its supply and demand. The Forest Service is compelled to re-evaluate an analysis of the management situation for lightered wood.

Response: This has been added to the Analysis of the Management Situation files and has been included in the FEIS.

201 - Plan, page 3-23, para. 1: Lyonia ferruginea is probably renewable, and perhaps worth selecting within certain types of managed stands, in balance with conservation goals. Deer moss is perhaps of quite limited renewability. These types of production and harvest need careful study through adaptive management.

Response: We agree. Thank you for your comment.

206 - Miscellaneous forest products extraction need demonstrated proof of no impact; palmetto berries and lightered stumps should be removed from the extraction list.

Response: Proof of no impact is not needed to permit an activity. All activity has some degree of impact; and in many cases, all the impacts are not known. This FEIS is designed to disclose significant impacts as best known and understood with available data.

227 - Plan, page 3-22: Have a concern about earthworm removal, and would like information about the research being done to learn about the role of earthworms in the ecosystem. Concerned about earthworm removal sites - bogs & savannahs? What is the level of impact? This would include vehicle access.

Response: A study has been done and research in continuing on earthworm bait harvesting impacts on the forest. No significant impacts have been identified so far.

227, 229 - Plan, page 3-22: Oppose exploitation of wetland products (sphagnum moss and aquatic plants).

Response: Thank you for your comment. Most of these products come from previously disturbed areas such as roadside ditches.

230 - Plan, page 3-29, Exotics: Honey bees are an exotic competing with native pollinators. We recommend the Forest Service stop leasing its lands for apiaries.

Response: Thank you for your comment. The benefits to the local economy, culture, and life-style were considered in relation to the effect on native pollinators.

230 - LA-11: Restrictions should be placed on where and in what quantities resources can be taken.

Response: These restrictions are better administered on a site-specific basis by the District Ranger.

233 - Stop harvesting of special forest products.

Response: Thank you for your comment. Allowing the harvest of special forest products is within the mission of the Forest Service.

69 - Plan, page 3-23, VG-33: Standard should be expanded as follows: Permit lightered stump . . . is part of an administrative study, or on clearcuts, or thinned areas, or other areas to be regenerated.

86 - Stumping should be resumed since no one has proved that stumping has a drastic influence on the forest.

98 - Stumps are a useful, valuable and a renewable natural resource .

155 - Include in the final plan the permitting of lightered stumpwood harvesting. By permitting stumping, studies can be done concurrently to evaluate the impacts of this operation and help determine the future of the wood rosin industry.

166 - The environmental effects of stumping are minimal compared to timber harvesting and site prep operations. Stump harvesting is just one part of the forest products industry providing employment. Several permits and plats were given to Mr. Siderits at the Eustis workshop on February 4, 1995, hopefully these areas were evaluated for stumping.

192 - Pleased to see the issue of lightered wood mentioned, it is the responsibility to include further consideration of an actual study under the monitoring section of the plan and to provide for an active sales program, should the study so indicate.

199 - Find that stump removal will benefit in more than one way. The method that Hercules has now for removing stumps, the ground is left in a better way than it was 15 years ago.

220 - The plan will undoubtedly create a perpetual supply of lightered stumps and some percentage of those stumps can be removed without harm to the land.

228 - I was very disappointed that the harvesting of old dead distillate wood ``old pine stumps" is not included. These stumps can be harvested without impact to the forest or the environment. Amend the Plan to included removal of pine lightwood stumps.

258 - These stumps can be harvested by Hercules without impact to the forest or the environment.

Response: A previous decision was made concerning harvesting of stumpwood. We have no new information to support reversing this decision. We have allowed for stumpwood removal in an administrative study which could lead to a new decision.

84 - The Forest Service should be very careful in regards to permitting palmetto berry harvesting; possibly ban harvesting; at the very least the rate of permit approval and harvest levels should not be increased until research is conducted on the effects of harvesting on wildlife, particularly Florida black bear.

107 - The plan doesn't make any changes in the current practice of issuing permits for collection of palmetto berries.

227 - Plan, page 3-22, Standard VG-30: Request that specific guidelines be developed that would control both the location and amount of palmetto berry harvesting in these forests to ensure that foraging needs of wildlife species are not adversely impacted.

227, 229 - Important forage plants, such as palmetto berries, should not be exploited.

229 - Have a significant concern about palmetto berry exploitation due to the value of this food item to Florida black bears. Standard VG-30: Request that specific guidelines be developed that would control both the location and amount of palmetto berry harvesting in these forests to ensure that foraging needs of wildlife species are not adversely impacted.

Response: Palmetto berry harvesting is discussed in relation to Florida black bears in the Biological Assessment.

86 - Commercial removal of stumps within large areas should be allowed if a study does not prove that removal has a dramatic influence on the National Forest.

98 - An administrative study will show the benefits stump removal has to the environment.

104 - Develop mitigation measures for the harvest of distillate (stump) wood and make experimental sales as research tools for evaluating the environmental and socio-economic impacts of stumpwood harvesting.

120 - Harvesting of Dead Pine Distillate Wood—DEIS refers, under ``Special Forest Products," to ``VG-33—Only permit lightered stump extraction where stumps occur within a proposed road, facility, or other planned construction or where their removal is part of an administrative study." Recommend to amended—Permit lightered stump extraction where stumps occur within a proposed road, facility, other planned construction, and within an administrative study—which would provide for an active sales program—should the study so indicate.

193 - The Plan does not indicate that such a study will actually be undertaken, or that the study results could allow for the resumption of dead pine distillate wood sales on NFs in FL. It is recommended that both these important points be included in the final Plan.

Response: The Forest Plan does not make any site-specific decisions such as whether or not to do a study, sell a stand of timber, or construct a facility. The Forest Plan gives direction on what activities can occur where and within what parameters. The Forest Plan allows for an administrative study. Any study would be proposed as a site-specific project. Any results of a study would be included in the monitoring program and should a need for change be identified, a plan amendment would be proposed.

157 - The collection of snakes and its permitting should be added to the list of special forest products. Because snakes are usually collected for commercial reasons, there should be a fee for the permit, and a fine should be levied for collecting without a permit.

216 - Plan, page 3-22, VG-30: Urge the Forest Service to require that anyone collecting snakes on national forest lands at least possess a harvesting permit of $50 per year.

227, 229 - Request that the Forest Service establish a permitting system with an appropriate fee structure to adequately fund monitoring of harvesting reptiles and amphibians, and research into potential impacts to overall reptile and amphibian populations.

Response: The collection of animals on the forest is governed by the Florida Game and Fresh Water Fish Commission. A permit is required from that agency for commercial collection of animals.

216 - Plan, page 3-23, VG-33: Lightered stumps should not be harvested at all from NFs in FL because of the importance to terrestrial wildlife of the subterranean refuges provided by tree bases to dozens of species of vertebrate and invertebrate animals.

227, 229 - Plan, page 3-23, Standard VG-33: Support the limitation on harvesting lightered stumps. Any administrative study to remove lightered stumps should be noticed to the public. Research should be considered for private lands instead of the NFs.

233 - Do not eliminate stumps in clearcuts, as they are the only wildlife refugia remaining in the clearcut.

Response: A proposal for an administrative study for stumpwood removal would be open for comment and be designed to provide the information needed for a subsequent decision.

227 - Plan, page 3-22, Special Forest Products: Analysis of the amount of each special forest product for each NF should be done, including use by wildlife (species specific), habitat type where ``product" occurs, revenues (to Forest Service & permittee), including cost to Forest Service to administer Forest Service enforcement capabilities.

227, 229 - Plan, page 5-5, Goal 5: For VG-30, Should be asking ``What are the impacts on the environment of the harvest of these products?" Then develop an item to measure for that question.

229 - Analysis of the amount of each special forest product for each NF should be done, including use by wildlife (species specific), habitat type where product occurs, revenues (to Forest Service & Permittee including cost to Forest Service to administer), and Forest Service enforcement capabilities.

Response: The ID Team discussed this at great length. Since we have no data showing how much of these forest products could be removed before negatively impacting the ecosystem, any numbers or limits we set would be arbitrary. In our best judgement, the total amounts of these products gathered are not significant and do not need to be regulated. Certain amounts of all these products are lost through natural causes such as fire, insects, disease, floods, or prescribed fire; and we have not noticed that the supply of any of these has diminished. The Forest Plan will require us to monitor amounts of these products gathered.

Longleaf Pine Restoration

71 - Longleaf pine habitat is severely threatened, restoration of this habitat needs much more significant attention.

Response: We agree; and that is why restoration of native ecosystems is emphasized in the Forest Plan.

110 - Supports the removal of off-site pine and the restoration of longleaf pine, provided that plantation rows are not used during planting.

Response: Machine planting is the tree planting method that has the highest success rate. Unfortunately machine planting causes the plantations to have evenly spaced rows of trees.

124 - Similarly with thinning and restoration of longleaf pine. You plan to clearcut vast areas of slash pine and plant longleaf. Why not try more than one method? Ask your Forest Service researchers, who are usually confined to their experimental forests, to design experiments on these forests.

Response: While we are planning to clearcut off-site slash pine and plant longleaf pine, other methods will be used. Thinning will favor longleaf pine in mixed stands, and the fire regime will favor establishment of longleaf pine over other pines. We do plan to continue to work with research in developing site-specific restoration strategies.

157 - Strongly approve of the long-term objective ``to restore all the off-site pine to the appropriate native vegetation," but wonder if it would be economically feasible to convert more than 15,000 acres during the 10-yr period. We would support more rapid conversion if economically feasible.

Response: The objective acres were developed considering other resource objectives such as habitat fragmentation, scenery management, and soil and water protection. Also, projected budgets and work force were considered. Standards and guidelines for RCW also restricted the acres regenerated in RCW HMAs.

206 - Monitoring of ongoing activities that impact the forest and its resources should become a priority.

Response: Once the Forest Plan is approved and implementation begins, monitoring will be the priority.

206 - Support using methods affording the least soil disruption for restoration of off-site species.

Response: We agree and have included standards and guidelines for this direction.

216 - Plan, page 2-5. FWO 3: How did the Forest Service arrive at 10,000 to 15,000 acres of off-site slash pine to be restored to native vegetation in the next 10 years? However, if 25,00 [sic] to 50,000 acre can be restored in the next 10 years when it become economically harvestable, believe as much as possible should be converted and as rapidly as possible.

Response: The acres of off-site slash pine were determined using existing forest types on well-drained soil types. Two categories of off-site slash pine were developed for the planning model: severely off-site and probable off-site, based on soil drainage. The priority is to restore the severely off-site first. The limitations on doing it all in the first 10 years include: age class constraints in even-aged management within RCW HMAs, scenery management concerns, and operational feasibility of regenerating such large acreage in a short period.

216 - Would like to see the Forest Service develop a policy statement about the natural occurrence of slash pine on NFs in FL, then their plans for managing the species in its natural setting. Would like to see the Forest Service develop a policy statement about the natural occurrence of pond pine (*Pinus serotina*) on NFs in FL, then their plans for managing the species in its natural setting.

Response: The intent of several of the goal statements in the Forest Plan is to manage natural components of ecosystems. Slash pine and pond pine are both indigenous to the national forests and will be managed to maintain their natural role.

227, 229 - FWG 6: Support the concept of maintaining and restoring ecosystem composition, structure and function, request that this statement be applied to all native ecosystems within the NFs in FL, and not limited to the listed ecosystem types.

Response: The language of forestwide Goal 6 has been changed to reflect this.

227, 229 - Plan, page 5-3, Goals 6, 8 & 9: There needs to be monitoring of the effects to soils and understory on sites to be restored.

Response: The number of acres of each site prep method will be monitored, as well as recording data on the understory. Project-level mitigation measures and monitoring also will track this.

229 - Request that FWO 3 paragraph be revised to specify that native vegetation also includes native groundcover, and that assurances are stated that clearcut harvesting will be conducted in a manner that will not interfere with restoration of native ground cover.

Response: The definition of restoration includes native plant cover.

232 - It is very important that the restoration of these logged sites to longleaf pine be done in a way that preserve the herbaceous understory which harbors so much of the biological diversity of the longleaf pine ecosystem.

Response: We agree. Standards and guidelines have been developed to encourage using the least ground-disturbing methods, depending on the site-specific situation.

232 - Where the understory has been substantially degraded by previous conversion to off-site pine species, it should be restored with herbaceous species collected on the forest from nearby sites.

Response: This will be considered in the site-specific decision to restore sites and depends on the availability and feasibility of transplanting material.

11 - Supports the decision for restoration of longleaf.

71 - Support restoration of historic longleaf pine habitat.

80 - Support restoring species where they originally occurred whenever possible.

145 - Strongly support the use of prescribed fire and uneven age harvesting in restoration of longleaf pine ecosystems.

200 - I very much appreciate and approve the following elements of the plan, the move to restore longleaf sites to longleaf.

219 - DEIS, page 3-27: Elated to learn that in all alternatives, existing slash pine stands identified as off-site will be scheduled for type conversion to longleaf pine.

227, 229 - Plan, page 3-19, Standard VG-3: Support the restoration of all ``off-site'' slash pine back to native vegetation. Guidelines for determining which native tree species will be replaced should be developed and included in this section, as well as a discussion of how these native species will be planted.

232 - We strongly support the conversion of off-site slash and sand pine to longleaf pine and feel that the timber produced by this conversion will benefit local communities greatly.

Response: Thank you for your comment.

156, 203 - Restore 11,876 acres to longleaf.

192, 193 - Modified Alternative: Longleaf Pine Restoration - 11,876 acres.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

227 - FWO 3: Criteria should be developed to determine where pond pine likely existed prior to conversion to slash pine. Pond pine will be restored to these sites.

227 - FWO 3: Request that this paragraph be revised to specify that native vegetation also includes native groundcover, and that assurances are stated that clearcut harvesting will be conducted in a manner that will not interfere with restoration of native ground cover.

227, 229 - FWO 7: See comments (34 & 35) pertaining to ``native vegetation'' in discussion of FWO 3.

227, 229 - FWO 3: Support the restoration of off-site slash pine back to ``native vegetation,'' it is unclear as to whether the term ``native vegetation'' includes native groundcover or just native trees. Will this include restoration of pond pine where it has been replaced with slash pine? Will this objective allow for mixed longleaf and slash pine in flatwoods? How will it be determined what species or mix of species of ``native vegetation'' occurred prior to conversion to slash pine?

Response: Restoration of pond pine ecosystems may occur under Goals 6 and 8 or Objective 3. The emphasis during the next 10 years will be in slash pine on longleaf pine sites due to the relationship between RCW and longleaf pine and the nationwide reduction in the longleaf pine ecosystem. Native vegetation does include ground cover and is addressed in several standards and guidelines and through the objective of prescribed burning. Mixed stands will still exist and each restoration project will have a site-specific analysis to determine target species composition.

Sand Pine Scrub

21 - Support the creation of a separate zone to maintain xeric oak scrub habitat for scrub jay, USFWS to provide funding for consistent long-term monitoring/evaluation.

Response: Thank you for your comment. MA 8.4 provides for this.

21 - Concern about development of large openings through clearcutting and the possibility of backlash from the public.

Response: There will not be an immediate change in clearcut sizes. Efforts in public education and interpretation will be expanded to mitigate the reaction.

21 - Initiate a public education program on the benefits clearcutting has on the Ancient Island tract.

Response: We intend to do this.

21 - In the short-term, select cutting units that are spatially separated to avoid large openings adjacent to highly traveled roads.

Response: The Forest Plan and layout of specific cutting units will take these points into consideration as developed by an Interdisciplinary Team.

84 - Suggest the Forest Service use designations such as RNA and Special Interest Area to protect the longleaf pine sandhill islands around Lake Kerr in the Lake George District.

Response: There has not been an identified need for an RNA in this area, and special interest area designations are usually reserved for sites containing unique values. This area will be protected by implementing the proposed access policy which will restrict bicycles and motorized vehicles to open, numbered roads and designated trails in this area.

84 - Do not think that the research done so far shows that we should embrace commodity-based timber production and harvesting of sand pine as the vastly predominate means for managing scrub in the Ocala NF.

Response: The preferred alternative does not emphasize commodity production. The large openings in sand pine reflect the needs of sand pine for regeneration and the needs of the threatened Florida scrub-jay.

84 - To characterize prescribed burning of scrub as ``too dangerous" in order to justify that the vast majority of the scrub on the Ocala NF will be clear-cut instead of burned is not realistic.

Response: This statement is not meant to justify timber harvesting. Timber is a resource managed under the Forest Service mission. The reality is that fire in mature sand pine is difficult to control and is extremely dangerous.

84 - Take issue with the designation of only approximately 15,000 acres as natural regeneration, while much more of the scrub on the Ocala NF could be safely and effectively designated and managed as both 8.1 and 8.4. 50,000 acres would represent a great stride towards true ecological management of the Ocala scrub.

Response: The 15,000 acres dedicated to natural regeneration will be monitored closely and depending on the results may be applied to larger acres in subsequent plan amendments or revisions. MA 8.2, which applies to most of the scrub, allows for a mixture of natural and artificial regeneration. Sand pine stocking levels have been reduced to allow for a wider range of acceptable natural stocking.

88 - Plan, page 4-45, para. 1: Timber harvesting and mechanical site preparation does not duplicate fire.

Response: The statement does not say that harvesting and mechanical site prep duplicate fire. It states that the effects are similar, but that openings are smaller than in wildfires and less deadwood is left on the site. We agree with you that timber harvesting cannot replace fire as a tool for managing the ecosystem. We intend to keep all the tools available for our managers.

88 - Believes that timber management cannot completely replace fire as a tool for managing this ecosystem, and recommends that fire be used when possible to mimic natural conditions and mechanical site prep be discouraged.

Response: We agree. Forestwide vegetation standards, specifically VG-17, reflect this.

88 - DEIS, page 3-53: Believe the statement ``clearcutting in sand pine appears to mimic . . . habitat created by clearcutting sand pine," should be modified to indicate that more research is required to determine the effect of timber harvesting and roller chopping on this ecosystem.

Response: This section has been edited to include more explanation of this concept.

88 - Plan, page 4-47, section 8.1-3: Assure the 320 acre clearcut will be accomplished in no less than 80 acre tracts. If there are 320 acres of mature sand pine, would the Forest Service clearcut the entire 320 acres?

Response: The direction is to allow up to 320 acre clearcuts. Site-specific concerns such as scenic values, other wildlife values, recreation uses, and existing conditions surrounding the area would all be considered in designing the harvest. The goal is to increase the size of the area to accommodate scrub-jay families.

88 - Plan, page 4-47, section 8.1-4: What is the basis for the statement?

Response: There may be cases where mechanical site prep to enhance endangered species habitat will be the best choice. For example, severe drought conditions may limit the use of prescribed fire during the summer. We want to keep all the tools in the toolbox for our managers to use.

88 - DEIS, page 3-53: Believes it is premature to make a conclusion regarding the beneficial affects of clear-cutting versus prescribed fire.

Response: We are not saying that clearcutting is more beneficial than prescribed fire. We are saying that several species have benefited from past management of clearcutting in sand pine.

88 - DEIS, page 3-53: Disagree that clearcutting and mechanical site preparation yield similar chemical results.

Response: We do not refer to any chemical results. We do not have data on chemical results.

203 - Harvest sand pine on 41,000 acres.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

219 - DEIS, pages 3-22 & 3-63: Support the revised management of larger clearcuts in sand pine to mimic natural conditions as much as practical.

Response: Thank you for your comment and support of this effort.

227 - How old does sand pine live without fire?

Response: Other than fire, the most common cause of sand pine mortality is a root disease complex. On an average, few sand pine live past seven decades. Stands of sand pine begin to experience increased mortality beginning around age 35.

227 - Forest Service should fund additional research to better determine the appropriate size of clearcuts to mimic historic fires.

Response: Thank you for your comment. Research needs are assessed annually and depend on budgets, available resources, and priorities.

227 - DEIS, page 3-21: Sand pine/scrub - why can't sand pine sites all be naturally regenerated?

Response: Some natural regeneration of sand pine probably would occur on all sites. However, national forests are managed under the Multiple-Use Sustained-Yield Act. Much of the sand pine is managed for timber in addition to other resources such as wildlife and recreation. Sand pine is difficult to regenerate naturally through a timber harvest due to the heat requirement to open cones. To ensure a sustained yield of timber for the future, some minimum level of stocking is needed and natural regeneration may not provide that level of stocking.

227, 229 - Plan, page 3-21, Standard VG-24: Request that specific guidelines be developed specifying when to protect oak scrub stands or convert them to sand pine stands and specifying what other

considerations in addition to scrub jay habitat should be considered when making this determination. Firelines should not be allowed.
Response: As the standard states, this will be done on a case-by-case basis. The factors involved in weighing these decisions can be different in each case and specifying criteria to cover all cases would be cumbersome. In any case, the Forest Plan would not make these project-level decisions.

227, 229 - Plan, page 4-47, Standard 8.1-4: The second sentence should describe the circumstances under which site preparation would be needed for T&E species.

Response: This standard has been changed.

227, 229 - What is the feasibility of more burning in scrub?

Response: We are conducting research on burning in the scrub and have included a scrub-jay management area where early successional habitat will be maintained by prescribed fire.

227, 229 - Research in bombing range on vegetative response to fires would be useful - is this being done?

Response: Research is being done in the bombing range on scrub-jay and the related habitat conditions created in the area by fires and military activities. Specific research proposals are not decided in the Forest Plan. Broad, general research needs are identified as priorities.

227, 229 - DEIS, page 3-21: Does removal of crooked wood (rusty lyonia) a misc. forest product, remove nutrients?

Response: Yes, some nutrients are removed when organic material is removed from a site.

227 - Plan, pages 4-44 - 4-45, DFC 8.0: 1) Allow some natural fires to burn. A prescription should be developed to use if this opportunity arises, 2) Leave more deadwood, 3) Increase size of clearcuts, 4) Avoid plowlines and use existing roads and clearcuts, 5) delete ORV statement in the fifth paragraph on page 4-45, horses should also stay on roads and designated trails.

229 - Plan, pages 4-44 - 4-45, DFC 8.0: In order to mimic natural processes, develop language in the DFC description and standards that would: 1) Allow some natural fires to burn. (A prescription should be developed to use fire if this opportunity arises); 2) leave more deadwood; 3) delete ORV statement in 5th paragraph, page 4-45, as this use should not be allowed on undesignated and trails; 4) horses should also stay on roads and designated trails.

Response: It is our policy to suppress wildfires with the appropriate response (see forestwide standards for wildland fire suppression). Forestwide vegetation standards emphasize retention of snags and deadwood on site. DFCs 8.1, 8.2, and 8.4 provide for larger clearcuts. Forestwide standards emphasize avoiding plowed lines and using other methods. OHV use is a legitimate use of national forests and will be permitted restricted access in the scrub. While horses can cause damage, their use is presently at a low level such that incidental cross-country travel has not caused significant damage to forest resources.

Soil, Water, and Wetlands

12 - The Apalachicola NF probably contains numerous areas whose hydrogeologic and woodland attributes are not well understood and need to be more extensively surveyed.

Response: Yes, we can always learn more about an area, which will better enable us to select proper management direction.

12 - Any timber activities on the southern section of this forest parcel could disturb the floodplain, resulting in soil losses and a decline of the local amphibian population.

Response: Harvesting activities conducted during dry periods and with the use of silvicultural BMPs would have little to no impact on the area.

12 - ``Special Interest Areas'' in the plan contain a number of sinkholes, and it cannot be overemphasized protection from potential contamination. Sinkhole on my property is directly connected to the sinkholes in the special interest areas and hopes the Forest Service can help to protect against contamination by ensuring activities undertaken in the adjoining forest parcel are conducive to maintaining its water quality.

Response: Standards and guidelines for the protection of sinkholes are provided in the Forest Plan.

12 - The southern section of this forest parcel fits the image of an ``outholding'' and a potential land swap candidate, which could set the stage for a future calamity.

Response: We do not have any plans to trade this parcel at this time. Also, should we consider it in the future, we would be required to analyze the potential impacts to the sink area.

41 - Floodplain storage and capacity issues are not addressed.

Response: First, there are standards and guidelines and BMPs to protect these areas; and second, the hardwood floodplain forests have been removed from the suitable timber base.

63 - All riparian and wetland areas conserved as preserve units.

Response: Although we have many standards and guidelines to protect these areas, many are still available for other kinds of management.

109 - Attention to ``remote'' wetlands should be given to any buffer zone with areas more (legally) vulnerable to human disturbance.

Response: Should some activity that could impact this area be started we will do what is necessary to provide for its protection. Until that happens we do not feel this area needs a buffer zone.

109 - Attention should be given to vulnerability across the state line since the Osceola NF could be seriously affected by any degradation of water-quality in the Okefenokee.

Response: We will consider all activities planned and implemented across the state line and consider the impacts resulting.

110 - Supports restricting hardwood and cypress from timber harvesting in bottomland and wetland communities.

Response: Thank you for your comment.

110 - Recommend that the Primary Zone Width of 35 feet at sinkholes open to the Floridan Aquifer be increased to a minimum of 50 feet.

Response: The 35-foot minimum from sinkholes with water or open to the aquifer is an increase over the State BMP. Added to this is secondary zone if the slope/soil conditions warrant. Also, individual site conditions may warrant other safeguards as well.

110 - Plan, page 4-43, para. 7.2-3: Change as follows: Establish a livestock carrying capacity that minimizes impacts to resources. When . . . streams, ponds, sinkholes directly connected to the aquifer, herb bogs. . . .

Response: We do plan on monitoring cattle grazing on the forest. Impacts from cattle grazing are sometimes equated to those caused by native species like bison. The number of cattle grazing on the forest has been going down during the past 10 years.

193 - Cannot accept water quality issues as a valid reason to eliminate cypress and hardwood harvests.

Response: Water quality issues were not the reason these areas were eliminated from the suitable timber base. It had more to do with biodiversity and ecosystem management concerns. See Record of Decision for further explanation.

206 - Soil disturbance should be limited during all activities.

Response: In general, we agree with this statement. Standards and guidelines listed throughout the Forest Plan as well as site-specific controls are implemented to minimize disturbance during management activities.

209 - Protect sensitive lands such as wetlands, riparian zones, and scrub sites.

Response: These areas will be afforded protection under the standards and guidelines and with the new access policy.

216 - Urge the Forest Service to adopt a policy of refusing access to creeks, streams, rivers, sloughs, and ponds for the purpose of removing deadhead cypress.

Response: Although this activity is allowed any request for a permit to engage in this activity would be reviewed by many resource experts and appropriate standards applied.

227, 229 - Request that a statement be added prohibiting the removal of deadhead cypress from all wetlands and water bodies in the NFs in FL.

Response: This would be decided on a site-specific case. There may be times when this would be allowed and other times when it would not be allowed.

227, 229 - Plan, page 3-24, Standard WA-5: Use native species, not bahia, for revegetation. Rye is OK until vegetation recovers.

Response: We agree. This is covered under vegetation in standard VG-35.

227, 229 - Standard WA-8: Add ``Roads should be closed in streams, wetlands, ponds, etc., and these sites restored."

Response: This should be covered under the new access policy where bicycles and motorized vehicles may not travel cross-country. Then, closing and restoring areas where travel has occurred will be enforceable.

230 - Plan, page 4-15, Remote Wetlands: The proposal for allowing 50% of the area open to motorized vehicles is excessive for a `remote' wetland. We also object to timber harvest for other resource objectives. What are these `other' objectives? Why is none of the Apalachicola NF designated a remote wetland?

Response: This is a unique, large, remote wetland that provides opportunity for this designation. The conditions set forth for this area will help to achieve the remote wetland goals as described in the Forest Plan. Other resource objectives include insect and disease suppression, wildlife habitat improvement, and hazard tree removal.

233 - Disturbance of the soil should be restricted to fire breaks and roads.

Response: We try to minimize soil disturbance during all management options. Plowed firelines are discouraged when other options are available.

157 - Expansion of the primary zone is a good step (WA-2).

227 - Plan, page 3-24, Standard WA-2: Support the expansion of primary zones around water bodies. The guidelines should be clarified to include intermittent streams and ponds, and small isolated water bodies.

229 - Standard WA-2: Support the expansion of primary zones around water bodies. The guidelines should be clarified to include intermittent streams and ponds, and small isolated water bodies.

Response: This standard has been expanded to include all seasonal lakes and ponds. Also, on the ground conditions may dictate further restrictions or guidelines.

192 - Water quality concerns, which have been raised by the public, must be clearly defined and analyzed. Part of the agency's analysis must make it clear that protection of water quality is achievable through practices such as the 1993 Florida Department of Agriculture and Consumer Services, ``Best Management Practices."

216, 227, 229 - Urge the Forest Service to initiate a policy of recognizing the importance of small isolated water bodies to the vertebrate food webs of the ecosystems of NFs in FL and to begin specially targeting these special habitats for protection and proper management.

Response: The BMPs have been expanded to include all seasonal lakes and ponds which should help these areas. It is always possible and encouraged to add site-specific standards to cover conditions specific to the site.

196 - Urge the NFs in FL to adopt an immediate policy prohibiting vehicular traffic in the wetlands of the NFs in FL, especially in the numerous limesink depressions containing small isolated water bodies.

216 - Plan, page 2-4. FWG 8: Urge the Forest Service to immediately place off limits to motorized vehicles all ponds, lakes and small isolated water bodies.

Response: We agree. This should be accomplished when bicycles and motorized vehicles are no longer permitted to travel cross-country. Many of these areas have been posted closed and will continue to be posted closed.

216 - Logging in wetlands must not be allowed on NFs in FL.

223 - Protect riparian zones, wetlands, and other sensitive sites with wide buffer zones to prevent direct, indirect, and edge effects.

Response: Although allowed, removal of the bottomland hardwoods from the suitable timber base will severally reduce the number of acres available for timber production.

227 - Plan, page 3-24, Standard WA-3: Feel uncomfortable with harvesting timber, including sand pine, in Primary Zone for any reason other than restoration. There should be specific standards to protect soils and groundcover, and to prevent rutting.

229 - Standard WA-3: Opposed to harvesting timber, including harvesting of sand pine, in Primary Zone for any reason other than southern pine beetle control restoration. There should be specific standards to protect soils and groundcover, and to prevent rutting.

Response: Protection of soils and prevention of rutting is not usually a problem in sand pine sites. Sand pine is the only exception to the no cut in primary zone. Usually, sand pine sites do not involve lakes or riparian zones, and when they do, special standards can be implemented as needed.

Minerals

3 - A new standard should be made to prohibit the use of explosives on a regular basis within 1/4 mile of a homesite unless the owner of the homesite has granted written permission.

Response: The use of explosives is so minimal that a standard was not needed. Explosives are approved on a case-by-case basis only.

13 - There are large tracts of private lands for mining interest, there is no reason to damage public lands for private benefit.

Response: Resource extraction such as mining is considered an appropriate use of national forests. Mineral and gas leases bring income to counties through the 25-percent revenue receipt to counties, as well as supporting local economies.

227, 229 - All mineral extraction proposals should be subject to public notice and comment, including any new borrow pit proposals. Are generally opposed to any new borrow pits being developed in the NF.

Response: Any mining proposals would be subject to the NEPA process and involve public notice and comment. The sale of common salable minerals (sand and clay) would also come under the NEPA process.

229 - Standards pertaining to the development of leasable minerals should be located in the MA standards. It is obviously inappropriate to develop minerals in MA 0.1 but their development may be appropriate in MA 7.1.

Response: As stated in the forestwide standards section, the availability and leasing decisions will not be made in the Forest Plan, and therefore no standards for them exist. Such a decision would be project level, not in a forest plan.

63 - Ban mining.

221 - Banning the mining of materials is important for maintaining the hydrological health of the Springs and the future of the forest in the long term.

233 - Eliminate all mineral development.

Response: Mining is a long-established and appropriate use of national forest lands; this has been determined by Congress through several laws. With proper safeguards and mitigation measures, the hydrological health of the area can be protected.

Land Acquisition/Exchange

11 - Attempts should be made to purchase or trade for land on the Apalachicola NF that would connect Leon Sinks with the River Sinks Tract.

Response: We agree. Listed in the forestwide standards chapter are priorities of acquisition. We do have some priorities for acquisition, such as the Pinhook, but acquisition funds are currently very limited.

11 - Forest Service does not need to allow further exchanges of land for airport runways, control towers, roads, sprayfields, etc.

Response: The Forest Plan does not make these specific exchange decisions. However, the needs of communities and local economies continually change, and the Forest Service works with local communities to help meet the public need.

71 - Support aggressively acquiring additional lands within and adjacent the forests.

Response: Thank you for your comment. Acquiring lands will continue as funds permit.

71 - The Choctawhatchee Lands exchange would be a dangerous precedent for giving away public lands, which could be used for more developed recreation or timber harvesting.

Response: As the term *land exchange* implies, we are not giving up lands, we exchange them for parcels that have more value to us. The Choctawhatchee lands are small parcels unsuitable for recreation or harvesting.

152 - What is meant by acquiring land in all of Florida's national forests? Who is acquiring them? It would seem a very wise to do so.

Response: Since national forest land in Florida was mostly acquired when the Government bought in the 1930s, there remain many private inholdings throughout the Apalachicola, Ocala, and Osceola NFs. When possible, we acquire these inholdings when they become available in order to consolidate forest ownership and facilitate management of the resources.

200 - I very much appreciate and approve the following elements of the plan, the continued effort to acquire land within the forest perimeters. However, I would like to see the perimeters increased as contiguous private holdings become available.

Response: We will continue to seek to acquire all lands within the proclamation boundary, which is set by Congress.

200 - I would favor eliminating LA-4 and have NO exchanges, only acquisitions.

Response: Thank you for your comment; but land exchanges remain a viable option to acquire highly desirable lands or assist communities in meeting their public needs.

216 - DEIS, page 2-2, para. 6: Urges the Forest Service not only to consolidate its ownership patterns, but to aggressively resist giving up Forest Service lands to local governments.

Response: Land exchanges sometimes occur in order to meet the public needs of local communities. The parcels of land we receive in exchange can help us meet other goals of consolidation or protecting ecosystems.

223 - Purchase inholdings in sensitive or biologically rich areas.

Response: This is one of the highest priorities for acquisition, listed in the forestwide standards.

223 - Utilize corridors that would connect to other public lands.

Response: Forestwide Goal 18 addresses the need to acquire land to connect large tracts of public ownership to maintain biologic and hydrologic linkages.

227, 229 - Standard LA-2: Request the criteria used to guide land acquisition be amended to include a priority for lands that provide movement corridors for black bears and other wide-ranging wildlife, and which provide habitat linkages to other public lands.

Response: While not specifically stated in the forestwide standards for lands, this is addressed by forestwide Goal 18. Priorities for acquisitions such as habitat for endangered species will help in acquiring these lands.

227, 229 - Standard LA-4(a): Request addition of the following language at the end of this standard: ``. . . unless such land is needed to buffer National Forest lands or the exchange would subject National Forest lands to adverse impacts from the use or likely use of the exchange lands."

Response: We feel it is not necessary to include your suggested wording, since lands fitting those two categories would not be considered for exchange.

227, 229 - Standard LA-4(b): Request that this standard define the phrase ``best serve the public need'' as this phrase is vague and could be used to justify any transfer of forest lands.

Response: This is a term that would be hard to define to apply to any situation. The public interest will be evaluated on a case-by-case basis.

227, 229 - Standard LA-4(c): Request that specific guidelines be developed for this standard, as it could be read to cover a wide range of possible land transfers.
Response: Standard LA-4(c) describes specific characteristics of forestland that has been used for specific purposes (such as buildings and facilities) and would apply to a limited number of areas (those that have special use authorizations in effect).

230 - The goal of the Forest Service should be to develop contiguous ownership in each forest and provide adequate buffers between commercial development, major roads and the majority of forest lands.

Response: We agree; and by acquiring private inholdings, eventually we will achieve a good measure of consolidation.

230 - LA-4: Keep do not trade, NF lands adjacent to communities to prevent development of the urban/ wildlife interface and creation of avoidance zones.

Response: Thank you for your comment; but land exchanges remain a viable option to acquire highly desirable lands or assist communities in meeting their public needs. Sometimes this includes expansion of communities.

230 - LA-7: The Forest Service should not accept easements for roads or utilities as they generally adversely effect natural resource management and fragment wildlife habitat.

Response: Rights-of-way and easements are a long-standing and appropriate use. They often facilitate management by providing access at the same time they provide services to the public.

41 - Acquire more land into the forest system.

63 - Acquire all inholdings.

206 - We urge you to support the acquisition of inholdings and additions to NF's boundary especially Pinhook Swamp.

Response: This is one of our forestwide goals.

Special Uses

80 - Opposed to using public land for private gain.

Response: Thank you for your comment.

204 - Plan, page 3-11, Special Uses, subsection LA-8: It is stated that the Forest Service will ``(e)valuate special-use applications to see if they are in the public interest.'' What does ``in the public interest'' mean? FERC will not issue a ``certificate of public convenience and necessity'' unless it determines that the pipeline is in the ``public interest.''

Response: Generally, this has been taken to mean that which is the greatest benefit to the greatest number of people. This must balance with protection of the environment, which benefits the public as well as future generations.

206 - Requests for siting easements, pipelines, transmission towers, and drainage systems are incompatible with wild forests.

Response: While these sites would be incompatible with wilderness, wetlands, and sensitive ecosystems, they may be compatible with the general forest area.

206 - Please oppose incompatible uses such as mineral extraction and cattle operations. These decisions should be made at the Supervisor's level, not the Ranger Districts.

Response: Because we have a mandate from Congress for multiple use, mineral exploration, and cattle grazing these are not incompatible uses.

214 - The provision of telecommunications is in the public interest and should not be viewed as incompatible without any other consideration.

Response: There may be instances when this use is acceptable, and therefore an absolute prohibition is not appropriate. Individual requests will be evaluated for compatibility with the Forest Plan and on a site-specific basis.

218 - Plan, page 2-1, Forestwide DFC, para. 2: This paragraph lists many groups considered to be in close partnership with the NFs in FL. We believe the FL Power Corporation also has been partner with the NFs in FL and should be included.

Response: The Florida Power Corporation is one of our valuable partners. However, it would be difficult to list a few partners by name without listing them all, so we opted instead to describe the type of partners we have.

218, Plan, page 3-11, LA-10: The arbitrary requirement that all electrical lines less than 34.5 kv be buried remains in the plan, then the Forest Service should bear the extra cost of installing these lines. This guideline requires that all electrical lines less than 34.5 kv be buried. It is not reasonable to require electrical lines to be buried when there is no environmental justification or benefit that would offset the greater cost of construction. If the goal of holistic, ecosystem management is going to be met, then electrical lines, as well as other issues, must be evaluated in their total context, and costly construction requirements should be reserved for those instances when there will be a commensurate environmental benefit.

Response: This standard has been deleted since it appears in the Forest Service handbook.

218 - Plan, page 4-35, Infrastructure 4.5-1: It is stated that all new utilities serving develop recreation areas will be underground. Florida Power does not believe that such a requirement is necessary or appropriate, if such service is requested, the extra cost will be borne by the Forest Service.

Response: We disagree. We feel it is not only appropriate, but necessary to retain the natural character and visual quality of these areas.

218 - Plan, page 3-27, WL-5: It is not realistic or practical to require that surveys for gopher tortoises be conducted prior to performing vegetation maintenance with heavy equipment and that each burrow be marked with a 15-foot radius. The risk to gopher tortoises is small, but the very act of performing vegetation maintenance improves the habitat for gopher tortoises. Gopher tortoise populations along maintained rights-of-way are usually greater than elsewhere in the NF. Current vegetation management practices should be considered an environmental benefit for gopher tortoises and not an environmental impact.

Response: Gopher tortoise burrows provide habitat for eastern indigo snakes and other sensitive species. We feel identifying the burrows and marking with a 15-foot buffer is providing an adequate margin of safety for these species.

218 - The plan does not discuss vegetation management techniques that will be approved or disallowed for maintaining linear facility corridors in the NFs. If there are going to be restrictions on these practices, they should be presented in the plan.

Response: The Forest Plan does not make specific project-level decisions or list specific techniques for accomplishing objectives. It is designed to give our managers the freedom to use the techniques they deem appropriate.

218 - Plan, page G-3, Corridor: The definition states that a corridor is ``a strip of land identified for the present or future location of transportation or utility rights-of-way." If it is important to identify corridors, then the mechanism for doing so and a listing of the identified corridors should be included in the plan. Existing strips of land that serve as corridors but have never been identified formally should be allowed to function as a corridor for new linear facilities. Example, public road and highway rights-of-way should be available for consideration for routing other linear facilities.
Response: Language has been added to the standards and guidelines addressing this issue.

227 - Standard LA-8: This is far too vague and far too minimal in what is referred to as the ``public interest." LA-8 seems to leave the analysis and decision up to the districts.

Response: Simply by passing the three screens does not permit a project to take place. Once a proposal passes through the three screens it then requires a site-specific analysis. The standard does not address whether the District Ranger or Forest Supervisor makes the decision.

227 - All applications should go through the NEPA process unbiased, i.e., ``mitigation" for the proposed incompatible use should not be suggested to applicants, including land purchase and subsequent exchange for a desired National Forest parcel, PRIOR to the public review and comment in the NEPA process (and decision?).

Response: All proposals must go through the Forest Plan criteria and a site-specific analysis.

227 - Standard LA-9: This standard is meaningless and should be deleted.

Response: We agree. This standard has been dropped.

227 - Plan, page 3-12: Add the following standard: ``Recreation Residences will be phased out by the year 2025 and the sites will be returned to a natural condition."

Response: The policy for recreation residences is found in FSM 2721.23, *Special Uses Management*. Should a decision be made to convert the lot to an alternative use, the manual direction is to allow 10 years of continued occupancy after notification of such a decision.

227 - Standard LA-14: Revise as follows: ``If a recreation residence is destroyed (50% or more of its value) by a catastrophic event."

Response: This standard has been rewritten.

227, 229 - Standard LA-11: Request that this standard be modified to require public and notice comment prior to allowing these special use authorization, careful monitoring and reporting of quantity and description of resources authorized for collection, and specific criteria for permitting.

Response: Some permits for gathering forest products are of such a general nature (pinecones and firewood) that it is not deemed necessary to do a NEPA document and get public comment. It is up to the deciding official (usually the District Ranger) to decide if the scope and intensity of the project merits a separate NEPA analysis and public comment.

227, 229 - The plan as currently written is not in accordance with 219.27 (9) of Forest Planning Regulations (36 CFR Part 219). ``Provide the existing significant transportation and utility corridors and others significant rights-of-way that are capable and likely to be needed to accommodate the facility or use from an additional compatible right-of-way be designated as a right-of-way corridor. Subsequent right-of-way grants will, to the extent practicable, and as determined by the responsible line officer, use designated corridors." The NFs in FL have existing corridors. The plan does not indicate how the existing corridors will be used to accommodate future right-of-way proposals. This needs to be done.

Response: A standard has been added. For most special-use requests we attempt to collocate uses together to avoid disturbing and degrading new areas. In the case of utility corridors, this will be done wherever practical.

227, 229 - Cellular towers, as now built, are incompatible with the forest environment. A standard should be developed which spells out where they can be constructed and the limitations on their appearance.

Response: If a cellular tower proposal meets the Forest Plan criteria, it will then go through project level NEPA analysis and have mitigation that is specific to the proposal.

227, 229 - Resist pressure to allow private uses of NF lands for such things as municipal sewage spray fields, airports, private recreational camps and public recreation parks, and incompatible commercial uses such as motorcycle racing events; these uses should be located on private lands.

Response: We agree that the items you specified are better provided off the forests and on private lands. However, cases may arrive when we can help meet the public needs of our local communities by an exchange of land when there are few other options for the community.

204 - Plan, page 3-11, Special Uses: We believe that the two categories of ``compatible'' and ``incompatible'' do not adequately capture the complexities associated with the wide variety of projects that might be proposed to be carried out on Forest Service lands.

218 - Plan, page 3-11, Special Uses, Lines 5-7: Utility corridors are included in a listing of special uses that are considered to be incompatible. It is wrong to prejudge utility corridors as incompatible. In recent years the FS has prevented the routing of utility corridors within NFs and has forced electrical lines to be built outside the forest at a greater environmental impact and higher economic cost. This practice would be changed. A route through NFs has the least total environmental impact, it should be used.

218 - Plan, page 3-11, LA-9: This section seems to presume that new linear facilities will be located off NFs. The routing of linear facilities should not be evaluated in isolation. Projects should be evaluated in a holistic context, including routings both on and off NF lands, and the route with the least impact to the ecosystem should be selected.

Response: Thank you for your comment. The wording has been changed.

Roads

18 - DO NOT support the closing of any existing trails or roads.

Response: The Forest Plan is not making any site-specific decisions such as closing roads or trails. The prohibiting of cross-country traffic by bicycles and motorized vehicles will apply forestwide but will not in itself close any roads or trails.

41 - Borrow pit impacts are not even being addressed in association with road maintenance and reconstruction.

Response: Management of borrow pits is addressed in forestwide standards MI-1-MI-6. The discussion of the impacts of using salable minerals (sand and clay) from borrow pits has been expanded.

71 - Support closing many roads and downgrading the remaining ones to limit uses. More road closures need to be planned.

Response: Although the Forest Plan does not make specific decisions such as which roads to close, this is addressed by the descriptions of the DFCs of the management areas. In many of these DFCs, the number of roads is reduced.

80 - On the Apalachicola NF, appears to be some roads could be closed.

Response: There are undoubtedly roads on each forest that could be closed, and the inventory accomplished during the 2-year public involvement process should identify them.

84 - A revised land and resource management plan and EIS that does not carefully consider the impacts of roads and road densities and action to ameliorate these impacts in fundamentally flawed.

Response: Road densities will be reduced over time. Prohibiting cross-country traffic, which is the major cause of user-created roads, will ameliorate this. The ``Environmental Effects" section of the FEIS has been expanded. And finally, the Roadless Area Inventory is simply an inventory of what areas fit the criteria; there is no intent to eliminate or increase the number of areas on the inventory to manipulate road densities.

100 - The Dept. of Public Works maintains a Forest Service Agreement with the Seminole RD to maintain certain roads in exchange for clay, and hope to continue this working arrangement into the future.

Response: There is nothing in the Forest Plan that will preclude this agreement. The overriding factors will be the availability of common salable minerals (sand and clay) in the future, since they are depleted in some areas of the forest.

110 - Plan, page 3-8, para. IN-2: Add the following to the end: Place priority emphasis on roads that cross watercourses and contribute sediments and turbidity to those watercourses.

Response: Thank you for your comment. Our priority will be on roads where resource damage of any kind may be occurring.

156 - Reconstruct 341 miles over first planning period and roads scheduled to be closed would not be closed.

Response: The estimated road reconstruction needed by the preferred alternative is 406 miles, a little higher than the estimate for Alternative C.

195 - Far too much of the forest is open to vehicular traffic.

Response: We agree and feel this is addressed in the Forest Plan through the access standards and prohibiting cross-country traffic.

196, 227, 229 - Standard IN-3(a): Guidelines need to specify criteria for defining and determining ``unacceptable impacts" on PET species. Add ``Close roads that traverse creeks, wetlands, and other water bodies unless bridged."

Response: The Forest Plan provides general direction and specific criteria for all these species and habitats would be unreasonable to detail in the Forest Plan.

205 - If road building and recreational uses are to be consistent with biodiversity and species survival, these must be limited and controlled to have the least impact.

Response: We agree. We accomplish little road building anymore; from 1986-1994 only 7 miles of road were constructed. Mostly what we do now is reconstruction of roads for timber sales, recreation access, and public access. Roads continue to be created by the public, however, and that is the rationale behind prohibiting cross-country travel by vehicles, so that no more of these user-created roads will occur and fragmentation will be lessened.

206 - If the Forest Service budget is unable to accommodate a site specific inventory of such trails (unmarked travelways), the solution is to prohibit their use.

Response: This would be unduly restrictive. We are restricting their use in more sensitive areas of the forests.

209 - Continued road building has segmented many areas of the forest and precipitated an increase of motorized fatalities.

Response: We construct very few roads anymore; most of our work is road reconstruction, with the majority being on dead-end, low-speed roads providing access to timber harvest areas.

215 - Urges the Forest Service to abandon this road building emphasis and instead seek to restore large, wilderness areas in the national forests.

Response: We construct very few roads anymore; most of our work is road reconstruction, with the majority being on dead-end, low-speed roads providing access to timber harvest areas. Our management areas provide a range of primitive, remote, and undeveloped areas.

215 - The DEIS's review of road impacts is inadequate. On this basis alone, the Forest Service should issue a revised draft EIS and LRMP. The Forest Service fails to adequately address all the direct, indirect, and cumulative impacts that are associated with travelways.

Response: After the public comment period, the discussion of effects in the FEIS has been expanded.

215 - The DEIS fails to provide any mileage figures whatsoever for ``unmarked travelway."

Response: Because of the vast number of these unmarked travelways, we have not been able to accomplish this inventory. Such an inventory will be one of the goals of the 2-year public involvement process to develop a system of trails.

215 - The DEIS's discussion of the impacts of federal, state and county roads is unlawfully restrictive.

Response: We disagree. The discussion of impacts of the alternatives in the FEIS has been expanded in several sections, including roads. We do not believe the discussion of these impacts is restrictive.

215 - Calls on the Forest Service to propose, as part of the publication of a revised DEIS and LRMP, road density standards for all national forests.

Response: Road densities would be an unrealistic standard for national forests. Variances in terrain, timber sale programs, materials, etc., are too wide to establish forestwide road densities. The management area descriptions give an indication of the density of roads in each.

215 - The National Environmental Policy Act requires the Forest Service to accurately discuss the impacts of roads in the EIS, but the DEIS's limited discussion is inadequate.

Response: Additional discussion has been added where impacts are relative to the decisions in the Forest Plan.

215 - In the discussion of infrastructure, the DEIS provides a superficial discussion of road closures.

Response: The analysis in the FEIS has been expanded.

215 - Questions how the Forest Service can define a road as ``closed" if, in fact, cars, trucks and heavy vehicles lawfully are able to use the road.

Response: A road is deemed ``closed" if the Forest Supervisor issues a road closure order. The road is then gated, posted, or a barrier constructed. In Florida, is difficult to keep a road closed since the terrain and openness makes going around these barriers and gates easy.

215 - Even if the road truly is supposed to be ``closed" to traffic, we question the effectiveness of the closure.

Response: Road closure is a difficult task to accomplish in Florida. The openness and terrain make it easy for people to drive around gates and barriers.

215 - The DEIS is underestimating the amount of ``closed'' roads and, as a result, the impacts from those roads.

Response: The FEIS states that from 1986 to 1994, 445 miles of roads were closed. This is a number based on our Transportation Information System (TIS) data base. It represents 10 percent of Forest Service roads.

216 - Agree that new road construction should be minimal and a higher proportion should be closed to motorized travel, BUT URGE THE FOREST SERVICE TO CLOSE ALL OFF-ROAD ACCESS TO MOTORIZED VEHICLES.

Response: The Forest Plan prohibits cross-country traffic by bicycles and motorized vehicles. Thus, all OHVs will need to remain on open, numbered roads, designated trails, or unmarked travelways.

219 - DEIS, page 3-14, Alternative E: Disappointed that there will be an increase in road construction about 2,300 miles.

Response: Road construction would be minimal in all alternatives. The number you are referring to is reconstruction. This is work done on existing roads. The shift to an uneven-aged system of timber harvest will require a system of roads to be maintained on the transportation inventory. The increase in reconstruction is to maintain these roads to future timber sale areas.

223 - Significantly reduce road networks and human structures.

Response: The management area descriptions contain the DFCs for the forests. In some areas, it is desirable to reduce roads and structures; in other areas, these facilities will be needed.

226 - The density of roads is unnecessarily high in many places and will impact endangered species like the Florida panther and Florida black bear and other species, and should be reduced to protect biodiversity.

Response: The Forest Plan addresses road density through descriptions of the DFCs of the management areas. In many of these, the number of roads is reduced.

227, 229 - Plan, page 3-27, section Florida Black Bear: After ``in a remote condition,'' add ``reducing road densities.''

Response: Thank you for your comment. We feel the sentence you cite implies reduce road density by stating ``. . . blocks of habitat in a remote condition and by acquiring further habitat lands, so that they also can remain undeveloped.''

227, 229 - Plan, page 5-5, Goal 5, N/A: It is unclear whether the roads being measured are system or non-system. This should be stated.

Response: This refers to system roads listed in TIS. The ``item to measure'' is miles of roads closed and deleted in TIS updates.

227, 229 - The Forest Service should map all existing accesses for each National Forest. Included should be system roads, nonsystem roads, system trails, unmarked travelways, and firelines which are used for access. This should be done before designating any new trails or constructing any new roads.

Response: We will be doing our best to inventory what we can as part of the 2-year public involvement process. We are counting on user groups volunteering their time and expertise to help us with this before a trail system is developed.

230 - We support the closure and revegetation of existing roads. We suggest a detailed plan and a schedule be developed with first priority given to roads in or adjacent to designated roadless areas, wilderness areas and the interior ``core'' of each NF.

Response: We are planning on developing a more detailed examination of the transportation system during the 2-year phase in period of the access policy which will include priority listing and public involvement.

230 - Increase road closure guidelines from 2-3% annually (LRMP, 5-5) to 5-10% annually.

Response: With the limited amount of funding we receive for this, we felt 2-3 percent was achievable and realistic.

230 - Plan, page 4-7, 0.1-8: We support revegetation of roads and removal of buildings.

Response: In general, we allow the forces of nature to take over old roads in wilderness areas but will revegetate if necessary. Structures and buildings will not remain in wilderness unless they are heritage resources or needed for resource protection.

233 - No new roads should be constructed and the maximum proposed number of roads should be allowed to return to natural habitat.
Response: We construct very few roads anymore; most work is reconstruction of dead-end roads leading to timber sale areas. Forestwide, many parts of the forest have been placed in management areas where road densities are reduced.

63 - Obliterate roads and return to a natural environment.

233 - The number of forest roads should be significantly reduced.

Response: We are doing this where possible and as funds permit.

219 - DEIS, page 3-14, Alternative E: Pleased that about 1,500 miles of existing roads that will be closed and obliterated.

230 - We applaud plans to restore closed roads to their natural condition (LRMP, 3-8) and encourage this as a high priority throughout the NF system.

Response: Thank you for your comment.

Desired Future Condition

145 - In the event that another alternative is selected as the final plan, the Forest Service should consider adding DFC 9.2 within that alternative.

Response: The urban interface concept has been widely supported by both internal and external commenters, and it will remain a part of the preferred alternative.

157 - Our concern: Although the plan talks the talk of ``adaptive management," it is unclear that this type of management will actually be implemented.

Response: We understand your concern. Our concept of adaptive management is to learn as we go. This will be accomplished by implementing an adequate monitoring plan, Chapter 5.

192 - The DEIS does not provide a rationale for the need for a Forest Urban Interface Management Area. The Forest Urban Interface Management Area is not a science based decision, but rather a political one and one which is not necessary, this MA should be eliminated.

Response: This management area was developed in response to land-use issues within this corridor. The basis was social science in response to concerns within this area.

201 - Plan, page 4-1, para. 1: Desired future condition is a concept of fundamental importance. Not only does it serve as the conceptual basis for quantifiable objectives relating to specific land and resource uses, but it also provides a basis for reference standard ecologies.

Response: We agree. Thank you for your comment.

227, 229 - Opposed to the expansion of Ocean Pond Campground. The only area that should be designated as MA 4.5 is the current acreage encompassing the Ocean Pond Recreation Area. The remaining area around Ocean Pond, other than the Experimental Forest, should be designated as MA 7.1. One other acceptable alternative would be to allow MA 4.5 designation in Alternative D to remain as it is in Alternative D. However, the standards in MA 4.5 would be changed, prohibiting any further expansion of the developed portion of the campground.

Response: Thank you for your comment. We feel that expansion of the management area is warranted to accommodate possible future recreation demands in the area.

227, 229 - MA 8.3 should be changed to MA 8.1.
Response: DFC 8.3, which included artificial regeneration and small openings in sand pine, does not appear in the preferred alternative. It appears in Alternatives A and D. The preferred alternative contains MAs 8.1, 8.2, and 8.4.

227, 229 - The components of the DFCs must be clearly stated and the differences from one DFC to the next must be obvious. The descriptions don't give a clear picture of the differences between DFCs.

Response: We feel the DFCs narratives contained descriptions of all the components. While many of the DFC narratives may seem alike, there are subtle differences that may not be evident at first glance; for example, the difference between primitive and semiprimitive nonmotorized. In some cases, the presence or absence of cattle or number of visitors you might encounter will have very little impact on how the ecosystem appears to the visitor.

227, 229 - What needs to be done is a two step process: 1) in the DFC narrative, generalize the component in a narrative form and 2) make the generalizations specific quantitatively. The second step is then carried into a monitoring program and an ``item to measure'' is identified for each DFC component.

Response: We agree. It is the forestwide and MA standards that are the ``specifics'' which we attempt to quantify and measure. It would be ideal to measure all the components of all the DFCs, but impracticable. Monitoring the standards, goals, and objectives gives us a ``do-able'' program.

227, 229 - The Forest Service needs to clearly identify the components of DFC for which goals are being established, generalize the components and then quantify them, establish a direct link (in the form of a ``question'' relating to DFCs and an ``item to be measured'' in the monitoring program for each DFC component, and quantify each ``item to be measured'' in the ``range'' section.

Response: While this is a good approach, it would be time-consuming and laborious to establish goals for every component of every DFC. We do not have the resources to accomplish this; instead, we establish forestwide goals, objectives, and standards which will create the DFC conditions, and that is what we must focus our monitoring efforts on.

227, 229 - Plan, page 4-9, Standards 0.2-4, 7, 9, 19, 20: Same as for MA 0.1.

Response: The standards cited are the same for MA 0.2 and MA 0.1.

227, 229 - Plan, page 4-39, MA 7.0: The description of DFC, paragraph 4, sentence 5 should be modified to read: ``Understory vegetation is a mosaic of saw palmetto, gallberry, dwarf blueberry, dwarf huckleberry, and open patches of herbaceous vegetation with a high diversity of herbaceous plant species and wiregrass.''

Response: The DFC has been edited to include some of your suggestions.

227, 229 - Plan, page 4-17, MA 1.1, Standard 1.1-7: Tree cutting should not be permitted. No insect or disease control should be allowed. Fires should be allowed to burn and there should be no plowlines.

Response: Thank you for your comment. In this remote wetland, trees may need to be cut for other resource objectives (along trails or for visual purposes); some insect epidemics such as southern pine beetle may need to be controlled; forestwide standards call for reducing the amount of plowed firelines; and our district staff use a range of wildland fire suppression techniques from monitoring to direct suppression.

227, 229 - Plan, page 4-20, MA 2.3: The goal and DFC description should be changed to reflect that this 81 acre parcel is being restored to the native community, or is being used for genetic conservation of T&E plant species.

Response: This area will still be used for genetic conservation of sand pine, as well as threatened and endangered plant species.

227, 229 - There must be a direct link between the DFCs and the elements of the monitoring program. This link doesn't exist for many components of the DFCs and there is no question in the monitoring program that asks whether the DFCs are being achieved.

Response: The link is in implementing the standards, goals, and objectives to achieve the DFCs. It is the forestwide standards, goals, and objectives that will be monitored to examine whether we are achieving the desired conditions.

227, 229 - MA 6.1 and 6.3 should be changed to 7.1.

227, 229 - The MA 6.3 acreage surrounding MA 0.1 on the Pinhook should be changed to MA 7.1. The area shown as MA 6.1 should be changed to MA 7.1 as it is in Alternative E.

Response: DFC 6.1 appears in Alternatives A, C, and D in the EIS. MA 6.1 and MA 6.3 do not appear in the Forest Plan. These DFCs were included in other alternatives. This permitted a broad range of management alternatives to be considered for analysis. Since DFC 7.1 appears in the preferred alternative, we assume you are agreeing that adaptive management as reflected in DFC 7.1 is a good course of action to follow.

227, 229 - In Alternative E, MA 7.2 on the Osceola NF should be changed to 7.1 as is done in Alternative D.

227, 229 - In Alternative E for the Apalachicola RD, the designation of MA 7.2 should be changed to 7.1.

Response: The only difference in the two areas is the grazing policy. In the final Forest Plan, a standard has been added that current allotments will be closed if vacant for 5 consecutive years. Should the demand for grazing continue to decline, the program will be gradually phased out.

Planning Process

41 - In the absence of essential information, management decisions are speculative at best.

Response: Several sections of the FEIS have been expanded to include more information.

103 - The information and analyses currently presented in the Draft Plan are inadequate for the FWS to properly evaluate and/or concur with your proposal.

Response: We have updated this information in the FEIS and have completed a Biological Assessment for review by the U.S. Fish and Wildlife Service.

110 - The plan is not intended to be site-specific, it is an opportunity to define the important role ecosystem management will play in forest planning, and a means of accomplishing this would be separating management guidelines for each forest into individual plans.

Response: Many of the goals and objectives of ecosystem management apply to all forests. Separate plans would have much repetition. The management areas are much better defined in the Forest Plan and the efficiency of having one plan does not compromise the integrity of each forest. Each forest was modeled separately and outputs from one forest did not depend on those from another.

124, 157 - Were is the evaluation of the last plan?

Response: *National Forests in Florida* completes yearly monitoring reports, as well as a 5-year monitoring report in 1991. An Analysis of the Management Situation was prepared during the revision process and is summarized in the FEIS and Forest Plan. These can be seen upon request at the Supervisor's Office in Tallahassee.

192 - The DEIS for the NFs in FL lacks development of alternatives around broad themes.
Response: The alternatives were developed around broad themes and draft alternatives of these themes were sent to the public for comment in 1995. The FEIS has been updated to reflect this.

192 - The listing of DFCs is the only description of the alternatives. Therefore it makes it difficult to understand or characterize the differences between alternatives.

Response: A theme statement for each alternative has been added. Chapter 2 in the EIS contains a description of the management highlights of each alternative. Table i-1 shows a comparison of outputs and allocations by alternative.

192 - The description of alternatives in Texas is an approach that should be used by Florida NFs.

Response: We took a different approach in formulating alternatives than Texas. We have incorporated a theme statement to the alternatives.

192 - For benchmark analysis, there is concern that the DEIS is lacking as not enough of the historical information or adequate AMS work, is included or analyzed. The DEIS does not include enough historical information. Had the DEIS shown harvest for the 1970's and 1980's, the reader and the decision maker would have a much better historical context with which to evaluate the alternatives. When more historical information is included in the EIS, it will be clear to all that management of the NFs in FL are severely impacting the local communities, especially Liberty County where the RCW management impacts have been greatest.

Response: The scope of the decision is the revision of the 1986 Forest Plan. Most information needed to be germane to the decision comes from 1986 to present. To include outputs prior to listing of endangered species and other requirements would be placing information out of context when compared to management under existing requirements. We have added information from 1986 to the latest available. Harvest levels from the 1970s do not reflect direction contained in the National Forest Management Act and the Endangered Species Act, among others.

192 - The DEIS does not indicate why Alternative E is the preferred alternative.

Response: This is not normally done in the DEIS. See Record of Decision for rationale for the selected alternative.

192 - Points out again, that the agency's AMS is inadequate.

Response: Additional information has been added to the Analysis of the Management Situation.

192 - The Forest Service is proposing a plan which exceeds current budgeting, both real and expected, the DEIS should consider an alternative which will be most likely achieved under existing budgeting.

Response: The Forest Plan responds to issues and opportunities and provides general management direction. An increase in the total budget over current levels would be required to implement the Forest Plan completely. Resource areas are funded separately, and funding levels vary annually. It is expected that some programs in the Forest Plan will be funded completely and others will not and this may vary yearly.

201 - Plan, page 1-2, para. 3: I guess all its proposed actions are provisional.

Response: That is correct. The Forest Plan is the first stage in a two-stage decision process.

201 - Page 2-1, paragraphs 3 & 4: Objectives that are not quantifiable are, by your own (I think, appropriate) definition, not objectives. It's all right to have such things to implement goals, and they need not be called objectives.

Response: We agree.

201 - Plan, page 2-4, para. 14: This is really not an objective as stated, but rather a guideline or policy.
Response: We agree it is not quantified, but it is measurable. We have no particular number in mind, but we intend to monitor how many partnerships are formalized in documents as a measure of trends.

202 - We need forest managers who have the ability and authority to make decisions regarding forest activities.

Response: We agree and believe we have managers with the ability and authority to make these decisions.

209 - Forest Service repeatedly ignores the NFMA which mandates that fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired nonnative vertebrate species in the planning area.

Response: We believe the Forest Plan will provide habitat to support viable populations of these species. A viability analysis is summarized in Appendix E of the FEIS.

215 - Urges the Forest Service to issue a revised DEIS and LRMP. Revised document should fully address the impacts of the proposed action; more adequately consider and advance the needs of Florida's wildlife and plant species; and implement a system of large, connected wilderness areas.

Response: The DEIS and proposed Forest Plan have been edited in response to public comment. Several sections of the DEIS were augmented and expanded to better consider the effects of the alternatives.

219 - DEIS, Chapter 2: This section provides an excellent description of the management highlights and comparison of the five alternatives considered in detail.

Response: Thank you for your comment.

223 - A reasonable range of alternatives should present significantly different levels of ecosystem protection, road density, timber levels, recreation levels, wilderness, etc.

Response: The alternatives were developed with a range of goals, objectives, desired future conditions, and management areas. The alternatives were not output driven but driven by desired conditions within the range of feasibility. For example: alternatives may have a different timber management strategy but have very similar volume outputs. The outputs are an effect of the timber management strategy.

223 - To comply with NEPA and the NFMA, would like to see the inclusion of several conservation biology alternatives to the DEIS.

Response: We feel we have complied with NEPA and NFMA in considering alternatives which respond to the issues and the multiple-use mission of the Forest Service.

227, 229 - The Choctawhatchee NF deserves to have its own map showing the allocation of DFCs and should be included in Table 2.1 of the DEIS.

Response: The Choctawhatchee parcels are so small that they would not show up on a map suitable for including in the Forest Plan or FEIS.

227, 229 - For many DFC components, it is not possible to determine whether the DFCs are being achieved.

Response: We agree; implementation of the Forest Plan will not result in immediate achievement of the DFC components. Ideally, yearly monitoring will show that the objectives are being achieved and this will bring us closer, albeit incrementally, to achieving the DFCs.

227, 229 - Have serious concerns as to whether many of the standards and guidelines presented in this section are specific enough to give adequate guidance for making on-the-ground management decisions.

Response: Forest Service managers and staff have reviewed the standard and guidelines and reached consensus that they provide adequate guidance. There effectiveness will be determined by monitoring.

227, 229 - DEIS, page 2-42, Table 2.2, ``Common Practices by DFC": In reality this table lists the management practices which are permitted in each MA and, as such, is a decision about how the land will be managed. It should be retitled as ``Permitted Management Practices and Public Uses by Desired Future Condition" and duplicated in the Management Plan document, either on page 4-1 or broken out by management area in the standards and guidelines.

Response: This table was an attempt to summarize some of the major activities that may occur in each DFC. It is not intended to be absolute or all-encompassing. Most of the entries are a shorthand version of standards and guidelines.

227, 229 - Forest Service regulations at 36 CFR, section 119.12(f)(9)(iv) requires that each alternative state the purposes of the management directions proposed. The description of alternatives presented in the DEIS at pp. vii-xv fails to satisfy this requirement.

Response: This has been added to the summary of alternatives.

227, 229 - Request that management directions for each alternative be described and discussed so that there will be a context for evaluating the various alternatives are required by 36 CFR, section 219.12. Forest Service regulations at 36 CFR, Section 219.7(c) require the DEIS to display the results of a Forest Service review of planning and land use policies of other federal, state and local governments. Unable to find any section in the DEIS that satisfies this requirement; therefore, request that this requirement be satisfied and submitted for public comment prior to final adoption of the Plan. Where local government comprehensive plans are incompatible with Forest Service management prescriptions, alternatives should be developed which recommend amendments to local government plans which would advance management of the NFs in FL.

Response: A discussion of coordination with other agencies has been added.

229 - Request the Forest Service to develop individual Forest Plans for the three NFs in FL.

Response: We believe it is much more efficient to combine the forests under one plan. Most of the direction applies to the Apalachicola, Ocala, and Osceola NFs, and exceptions are noted.

229 - Forest Service regulations at 36 CFR section 219.11(a) require that all forest plans contain, a brief summary of the AMS, including demand and supply conditions for resource commodities and services, production potentials, and use and development opportunities. The summary of the AMS contains none of these requirements. Request that the draft Forest Plan be revised to include demand and supply conditions for resource commodities and services, production potentials, and use and development opportunities in the summary of the AMS.

Response: This has been added to the summary of the Analysis of the Management Situation.

280 - When and where can I vote on related matters and who can I count on to represent me and my family's interest?

Response: The Forest Plan decisions are not determined by a vote, but by the Regional Forester as explained in the Record of Decision. By commenting on the Forest Plan and being involved in the process, you are your family's best representative. You are also represented by your local user group involved.

192 - Believe that further discussion of the magnitude and rationale for such tradeoffs is necessary as opposed to relying on political decisions.

192, 193 - Concerned that historical timber harvest is shown only for post-RCW regulation era. Had the DEIS shown harvest levels for the 1970's and 1980's, the reader and the decision maker would have a much better historical context with which to evaluate the alternatives.

Response: Additional information has been added in the ``Socioeconomic" section. See Record of Decision for rationale for the selected alternative.

209 - Urge you to reissue a new DEIS which will address the needs of the forest and comply with the laws stated in NEPA & NFMA.

215 - Objects to the general thrust and specific provisions of the DEIS and LRMP. Requests that the Forest Service publish a revised DEIS and LRMP rather than proceeding with the proposed alternative or any of the other listed alternatives.

223 - Request that the Forest Service reissue the DEIS with several conservation alternatives that will comply with the letter and spirit of NEPA and the NFMA.

Response: We believe we have complied with NEPA and NFMA and do not see the need to reissue a DEIS.

216 - The proposed revised land resource management plan is difficult for citizens (us) to understand because it is vague.

224 - We do not feel that the proposed plan is consistent with the legislative intent that the National Forest management plans include viable, economically sound timber production components.

Response: The Forest Plan gives programmatic direction for forest management and contains both general and specific direction. It also includes a sound timber production component.

227, 229 - Concerning the Pinecastle Bombing Range, the regulations (36 CFR Part 219) do not give the Regional Forester the latitude to refrain from identifying the DFC for any area on the NFs (section 219.11, parts b & c). The fact that there is an Interagency Agreement between the Forest Service and the Navy and it expires in 1999 is irrelevant. The allocation of DFCs is a long range goal setting process. Short range permits and agreements have no bearing on this allocation process.

227, 229 - The Forest Service should prepare a range of alternative DFCs for the Bombing Range just as it has done for every other area on the NFs and allow for public comment. Prefer to have it management in MA 8.1.

Response: The area has been allocated to a DFC in the Forest Plan. The area is undergoing site-specific analysis to determine the specific military use of the area.

Fire

1 - Prescribed burning is a good idea as long as you don't use it to completely manipulate the ecosystem and becomes a longleaf forest.

Response: Thank you for your comment. We intend to use fire in such a way to retain all elements of the ecosystem.

14 - The use of prescribed natural fire in a WSA under Florida law, this is a wildfire and cannot be changed to an authorized prescribed fire. Lightning ignitions in wilderness can be evaluated for limited action suppression tactics if they fall within specific guidelines, but cannot be listed as prescribed fire, but as wildfire.

Response: We have changed wording to be consistent with State fire policy.

106 - Seriously consider discontinuing prescribed burning, except possibly in rare instances as there are other means of controlling competing vegetation.

Response: Prescribed burning is a valuable management tool and fire is a key, natural component of many ecosystems function. We will not consider discontinuing its use.

107 - If ``adaptive management" allows dormant season burning as necessary for regeneration, then the process will work as planned; if not, uneven-aged management will not be successful. Concern to Alternatives B & E, uneven-aged management of slash and longleaf pine may require heavier emphasis on dormant season burning while the Plan calls for increased emphasis on growing season burning.

Response: Burning will be closely coordinated with reforestation efforts.

124, 157 - Wildfire suppression, isn't it true that most wildfires have been put out in the past? Is there a new policy to let wildfires burn to the extent possible. Why not state this as a new policy?

Response: Our wildland fire suppression policy is stated under ``Wildland Fire Suppression" in Chapter 3 of the Forest Plan.

198 - Is it really necessary to burn the large acreages that are now being burned? The Forest Service is facing manpower shortages and cutbacks in funds, can the burning cycle be changed to 5 years instead of 3?

Response: This objective is based on a 3-year average in the longleaf pine ecosystem. This is an average, and some areas may vary. We believe this interval is necessary to restore all components of the ecosystem.

198 - Younger stands should not be burned until they are at least 15 to 18 years of age in order to reduce the mortality that now occurs.

Response: This depends on the species, fuel type, and conditions during the prescribed burn. Young longleaf pine stands have been prescribed burned with little damage under certain conditions.

201 - Plan, page 3-3, paras. 9 & 10: There is a place for vegetation monitoring as a part of bioassessment of fire effects and attainment of objectives.

Response: Thank you for your comment. Post-burn assessments determine if the objectives have been met and assess conditions after the prescribed burn.

201 - Plan, page 3-4, paras. 5 & 6: Plowed fire lines should not be placed in ecotones.

Response: We agree as a general rule, but exceptions may occur during wildland fire suppression or for other resource coordination.

201 - Plan, page 3-5, para. 3: This should also apply to research natural areas and other reference areas to the greatest extent possible.

Response: See the standards and guidelines for research natural areas in Chapter 4 where this is addressed.

202 - Evaluate food sources before burning.

Response: Prescribed burning is conducted using a prescribed fire plan developed considering all resource objectives. Pre- and post-burn evaluations are conducted.

208 - Strongly support funding the positions needed for safe burning and monitoring the progress of the implementation of the plan.

Response: Thank you for your comment. We will strive to complete our prescribed burning program with the resources we have and make sure it is done in a safe manner.

226 - The Forest Service reluctance to burn hot fires as those that naturally occurred is unjustified.

Response: We disagree. Naturally-occurring wildfires are very dangerous; and we have a responsibility to public health and safety in managing the forest.

226 - It would be in the best interests of the ecology to do adaptive management experiments with fire and explore the effects of extreme fires that were characteristic of the habitats, as this would be especially advantageous in scrub ecosystems in Ocala.

Response: The Forest Plan does not preclude such experiments. We have conducted a stand replacement burn and are continuing to study the results.

227 - Plan, page 3-4, Standard FI-5: We are opposed to construction of plowed firelines in RCW clusters for prescribed fires. Alternative wording would be to ``allow the construction of soft firelines in RCW clusters under certain conditions."

Response: Forestwide standard FI-5 states do not construct plowlines in RCW clusters unless they are needed to protect active RCW cavity trees from damage or to protect lives or private property.

227 - FWO 4: The growing season months on each NFs should be defined.

Response: Growing-season months for the forests are generally March 15-September 30.

227, 229 - Request that you not limit the use of prescribed burning only to upland habitats.

Response: Burning will not be limited to these habitats, the emphasis will be in the upland areas.

227, 229 - Request addition of the following goal, ``Allow fire (wildfire supplemented by prescribed fire) to play its natural role (in accordance with current weather patterns) in all ecosystems (both upland and wetland) on the National Forests."

Response: Thank you for your comment. We believe Goal 10 in Chapter 1 encompasses your comment.

227, 229 - The general discussion on the benefits of prescribed fire does not mention promoting, enhancing, restoring and maintaining native ground cover and botanical diversity as a purpose or benefit of prescribed burning. We request that this stated purpose be added. Also request that a discussion on the benefits of growing-season prescribed fire on native vegetation be included here.

Response: The wording has been changed.

227, 229 - Standard FI-3: Couldn't criteria be developed whereupon an escaped fire could be redesignated as a prescribed fire?

Response: Criteria could be developed, but the objective of this standard is to discourage accomplishment of prescribed burning objectives using wildfire-fighting funds.

227, 229 - Standard FI-13: Request that criteria be developed for rehabilitation of different kinds of disturbances caused by plowed firelines.

Response: The Forest Plan is not intended to prescribe every detail of each possible management practice. The methods are left to the discretion of the District Ranger.

227, 229 - Plan, page 4-6, Standard 0.1-7: Omit ``when possible." Plan, page 4-30, Standard 4.2-1: Delete the words ``when possible."

Response: We believe that there may be cases where it is not possible to use minimal impact suppression techniques and some discretion should be permitted to the local manager.

227, 229 - Plan, page 5-3, Goals 6, 8, 9 & 10, Objective 4: Monitoring of burning interval needs to be differentiated by ecological land type to determine whether all types are being burned at the appropriate intervals.

Response: Thank you for your comment. As we monitor the location and interval of prescribed burning and enter into Geographic Information System (GIS) data base, we can screen by landtype associations.

227, 229 - Standard FI-10: Plowed firelines parallel to trails increases disturbance to soils and ground cover, hydrology, etc., and inevitably become unauthorized trails for ORVs. Use trails as firebreaks where possible, or backfire off of the trail.

Response: We agree that there should be little need to construct firelines parallel to trails, but there may be exceptions and this is a visual quality standard.

230 - The Forest Service needs to set and accomplish annual goals for acres burned by prescribed fire.

Response: We agree and do this annually.

230 - We support allowing lightning ignition in wilderness as approved prescribed fires.

Response: This has been modified to conform with State fire management policy.

232 - Fire should not be categorically excluded from hardwood communities.

Response: We agree, and it will not be excluded. Depending on the situation, prescribed fire will be allowed in some hardwood communities.

7 - Commitment to prescribed burning is very encouraging, since this is the key to successful management of the sandhill community. Growing season burns have been especially effective.

11 - Supports 3 year burn cycle.

29 - Burning is a valuable tool; however, some burns are in too large an area and many fires are too hot.

71 - Support restoring the historic frequency of fires.

80 - Strongly support prescribed burning even in the wetland and savannah areas.

110 - Commends prescribed burning record and recommends that burning during the lightning season continue to be increased.

152 - The goal of returning burning to it's natural cycle seems wise.

206 - Support the increased use of fire in the flatwoods of the Ocala.

219 - Strongly supply the current and planned burning program.

226 - An aggressive fire management program should also be introduced to reduce hazards and improve quality habitat.

227 - Standard FI-1: Support the goal.

227, 229 - Standard FI-12: Support this standard of allowing lightning fires to burn in wilderness and wilderness study areas.

230 - Plan, page 4-6, 0.1-8: We support the minimal suppression of wildfires.

232 - The growing season prescribed fire program should be continued at current levels.

233 - Continue to use fire as a management tool to achieve fire climax forests.

Response: Thank you for your comment.

19, 232 - Plowed fire breaks should be avoided whenever possible and more reliance on natural breaks, foam-lines, etc. should be encouraged. Plowed fire breaks should be avoided wherever possible to minimize groundcover disturbance. Standards expressed in the plan seem somewhat vague in this area and should explicitly prohibit plowed fire breaks except in emergencies that threaten lives, structure or other's private property.

227 - Standard FI-7: Opposed to construction of plowed firelines for prescribed fires. Request addition of a statement the plowed firelines should only be used when necessary to protect life or property in the event of wildfire.

230 - Replace the use of plow lines with soft fire breaks. Use trails as fire breaks.

Response: We agree that we should minimize plowed firelines and have included this in a standard. A complete ban on plowed firelines would not be practical, since there are cases where they cannot be avoided. We think the guideline is adequate to provide direction and allow for needed exceptions.

124, 157 - Could not find even general measurable standards for under what conditions burning could take place, how large areas should be that are planned for burning, the optimal frequency of burning, etc. How different are these standards from previous ones. Were previous guidelines followed? How often have compartments been burned in the past? What is the range? Will there be data in the next report 10 years from now? If you are going to have a 3 year average, does that mean that a lot of areas will be burned every other year?

227, 229 - Forest Service Regulations at 36 CFR, section 219.1(b)(12) require that standards and guidelines be both qualitative and quantitative, yet there are no measurable guidelines specifying optimal frequency of burning, under what conditions burning would take place, the optimum size of areas to be burned, etc. Request that qualitative and quantitative guidelines for prescribed burning be developed for this section.

Response: The Forest Plan provides programmatic direction and is not intended to prescribe all the details of management practices. Prescribed fire standards are found in FSM 5140, *Prescribed Fire Manual*, as stated in Chapter 1 and Chapter 3 of the Forest Plan.

156 - Reevaluate the prescribed burning goal and develop a more realistic goal based on anticipated funding and manpower levels.

192 - The DEIS is unclear in the amount of acres to be prescribed burned on a yearly basis by alternative. 158,000 acres per year are planned to be burned, the DEIS needs to provide a reality check with regard to the ability to achieve such a goal, and the Forest Service should review other alternatives which are more realistic.

192 - Modified Alternative: Re-evaluate based on realistic manpower, dollars and state air quality levels, 5 year average has been 94,400 acres.

193 - Approximately 158,000 acres per year for prescribed burning under the Alternative E is not a realistic goal due to anticipated funding problems and operational complications associated with uneven-aged management.

193 - The protection of the forest, particularly younger stands which are susceptible to fire damage, should be given greater consideration; therefore, it is recommended that the Forest Service reevaluate its prescribed burning goal and develop a more realistic alternative for inclusion in the final Plan.

193, 203 - Modified Alternative: Re-evaluate the prescribed burning goal and develop a more realistic goal based on anticipated funding and manpower levels.

220 - Fire management - NFs in FL are a successful example where prescribed fire has been used effectively to achieve multiple management objectives. However your goals for the future may be too aggressive.

Response: This is a realistic objective. In FY 1996 more than 153,000 acres were burned, and in FY 1997 more than 175,000 acres were burned. With the location of the Prescribed Fire Training Center on the forest, this objective should be obtainable.

206 - Fireline disturbance should be minimized and existing lines should be rehabilitated.

229 - FI-8: Specific guidelines should be developed for rehabilitating old firelines.

Response: The Forest Plan has standard and guidelines that include minimizing disturbance and rehabilitating firelines.

227 - It also needs to address the characteristics (depth, width, etc.) of the firelines.

227, 229 - Plan, page 5-5, Goals 6, 7, 8 & 9: The question needs to differentiate between new firelines and reconstructed firelines and differentiate by location of firelines (e.g., transition zones) and land type.

Response: We may consider collecting this data, but we are limited to how much detail we are able to collect.

Law Enforcement

9 - A stronger law enforcement presence is suggested, who will pay that expense.

Response: That expense will come from the Forest Service budget.

89 - The plan fails to reveal any discussion regarding the plan's impact on adjacent private property.

Response: This has been added to the socioeconomic environment discussion.

197 - If Reserved Statute 2477 rights were contested, resources might have to be used to defend against those claims.

Response: We agree. All standards and guidelines in the Forest Plan must be consistent with State laws and statutes; and we believe the plan is legal in this respect.

230 - We are concerned about the ability of Forest Service to enforce activities on the numbered, unnumbered, designated trails and unmarked trails.

Response: We are concerned also and intend to make our best effort.

89 - The majority of illegal dumpings are along the fringes of the forest.

109 - Law enforcement is a concern since it is likely to be underfunded and understaffed.

196 - Urge the Forest Service to enforce prohibiting vehicular traffic in the wetlands as vigorously as possible and in conjunction with the Leon County Sheriff's office.

Response: Thank you for your comment.

Socioeconomic

2 - Establish a goal of assisting local rural communities in areas around the forest to improve their economic base by encouraging ecotourism that relies on forest usage.

Response: Forestwide Goal 3 emphasizes the use of partnerships and cooperation to help local communities meet their needs; increased recreation opportunities and ecotourism may be avenues that contribute to the economic base of a community.

2 - The Plan needs to reflect and support these economic initiatives to the extent they do not conflict with sound resource management.

Response: While the Forest Plan does not make specific decisions about where and what type of trails are put in, we do have forestwide goals that encourage partnerships with local communities to meet their needs, which include economic needs.

70 - Strengthen consideration of economic and social impacts of management decision upon local community.

Response: The discussion of socioeconomic impacts in the FEIS has been expanded.

80 - It would be reasonable to grandfather in changes so that affected people could have time to make other plans.

Response: In many cases, existing uses are grandfathered in, and the Forest Plan contains standards that apply to new actions, not existing ones.

91 - Increasing the diversity of local economies and rural development is not a responsibility of the Forest Service and should not be part of the National Forest Plan.

Response: It is part of the Forest Service mission to help states and communities to wisely use the forests to promote rural economic development and a quality rural environment (FSM 1020.21.7, *Organization and Management Manual*). In addition, we have a forestwide goal to contribute to the socioeconomic well-being of local communities (Goal 5).

91 - Plan, page D-8: Replace with the following goal: ``Assess the environmental impact of all existing and proposed commercial activities within the NFs and determine and set limits for these activities."

Response: The monitoring task on page D-8 (now pageE-8) was developed to measure how effectively we achieve forestwide Goal 5. Proposed commercial activities will require a separate NEPA analysis to analyze their impacts.

91 - Add a policy which states, ``Review local comprehensive land use plans and recommend amendments to protect NFs and wildlife species which utilize habitats both within and beyond the boundaries of the forest."

Response: While we have a goal of working cooperatively with other agencies, we do not have the authority to recommend amendments to their comprehensive plans. Like members of the public, we comment and provide input on their planning, as they do ours.

98 - Stumping helps with the economic well being of the local communities.

Response: While this statement may be true, we must balance economic benefits with potential impacts to the resources. These impacts have not been adequately studied, and we do not have enough information on the effects to allow stumping.

101 - Before making a decision regarding the Liberty County proposal, review the March 16 Supreme Court Opinion No. 95-813 (Bennett v. Spears), as this ruling appears to be directly applicable to the past and future management of the Apalachicola NF.

Response: We have reviewed this opinion. Thank you for your comment.

102, 104, 158, 191, 207 - Forest management should be based on the best science available and that managers of public lands must fully consider other economic and social impacts of their decision making.

Response: We have attempted to include the latest scientific information and most recent statistical figures in our analysis.

104 - Use of non-research-supported restrictions within the Apalachicola NF have resulted in a drastic reduction in sawtimber harvest with severe economic and social hardships to the people of Liberty County.

Response: Guidelines for the management of the RCW and its habitat on national forest lands in the Southern Region were developed using input from an ID Team of scientists in the field and effects are documented in the Region 8 RCW EIS. The reduction in sawtimber harvest cannot be totally blamed on the RCW guidelines. During the same period, a national policy on the reduction in clearcutting on national forests was implemented. Nationwide, timber production on national forests has declined from 12 billion board feet to 4 billion board feet.

121 - Suggest you consider adopting an aggressive, intensive management program on a small percentage of the national forest land with the main objective of generating revenues.

Response: This idea was included in one of the alternatives as DFC 6.5. However, we felt it would not be in the best interest of ecosystem management, because some native species would be eliminated and an artificial environment imposed. Also, this would be managing an area for a single use and other benefits would be precluded—such as recreation, wildlife viewing, and threatened or endangered species.

148 - The impact of denying or overly restricting motorized trail use will result in a loss of revenues for surrounding communities and businesses.

Response: The Forest Plan does not deny or overly restrict motorized use. Only cross-country use is prohibited; motorized recreation can still occur on the numerous open, numbered roads, designated trails, and unmarked travelways. In addition, after the 2-year public involvement process, there will be designated motorized trails.

151 - NF management should be based on the best science available and that managers of public lands must fully consider the economic and social impacts of their decision making.

Response: We have attempted to include the latest scientific information and most recent statistical figures in our analysis.

152 - Hope this will be more than a passive approach to ``manage the forest," but a greater participatory effort which will include more people in the process.

Response: Our goal, reflected in the forestwide goals and objectives, is to increase public involvement through partnerships, agreements, and cooperative efforts.

155 - The loss of revenue from the sale of forest products has had an adverse economic impact on the communities and counties.

Response: Undeniably, revenues have declined sharply and counties have received reduced payments from Forest Service revenues. To address this, we included goals that strive to find creative solutions for economic development (see Goals 3 and 5).

157 - Our concerns: (1) What safeguards exist to assure that the stated objectives of the plan will actually be carried out? What assures that a change of administration won't bring a change in practices?

Response: The Monitoring Plan (*see* Appendix D of the Forest Plan) contains monitoring tasks for each goal and objective. This will tell us if we are achieving our objectives and the results. We will be preparing a monitoring report each year, as well as a 5-year monitoring report, which will give us feedback on whether or not we need to change direction, develop new objectives, or amend the Forest Plan. A change in administration cannot alter the Forest Plan except through the amendment process, which must first go through a public involvement process.

157 - Goals 1 and 5: The reader is uncertain how to interpret these goals. The social and economic well-being of local communities are largely their own responsibility. The Forest Service should not be involved in creating solutions for economic development of local communities at the expense of sound management of forest resources.

Response: We feel we do not have to give up one to get the other. Truly creative solutions to economic development work in concert with forest management to sustain resources. Also see FSM 1020.21.7.

171 - Urge you to take every possible step to preserve our remaining forest areas and protect them from commercial exploitation by loggers and developers.

Response: We feel the Forest Plan goes much further than any plan in protecting and restoring our forest resources. However, we are mandated by the National Forest Management Act and the Multiple-Use Sustained-Yield Act to provide an even flow of timber. In addition to contributing to the timber resources of the nation, this contributes to the local economies of many small businesses, communities, and counties.

173, 259-267 - To prohibit motorcycles and ATVs from national forests would generate an economic loss to surrounding communities.

Response: We agree. The Forest Plan does not prohibit or severely restrict motorcycles and ATVs on the forest. It prohibits cross-country travel but allows use to continue on open, numbered roads, designated trails, and unmarked travelways.

192-193 - The final plan must include some recognition of the fact that resource management decisions of the FS can play an important role in mitigating the effects of the Welfare Reform Act. Creation of job opportunities through the expansion of science-based harvesting is an appropriate way for the Forest Service to redeem its obligations to the people of north and central Florida.

Response: The Forest Service always has had a role in promoting rural economic development (FSM 1020.21.7) and in providing work, training, and education to the unemployed, underemployed, elderly, youth, and disadvantaged. We will continue to find ways to do that.

192-193 - Asks that the Forest Service not compound past errors by failing to recognize the human impacts of its management.

Response: We are keenly aware of the impacts of past practices, and many part of the Forest Plan are directed at correcting and restoring past mistakes. In the case of the RCW, past management practices created the conditions which resulted in the bird being listed as an endangered species. We have incorporated the latest studies and analyses to help us achieve a balance in protecting endangered species and encouraging local economies.

193 - The social and economic impacts of harvesting restrictions related to RCW management have never been properly identified and evaluated as required under the NEPA of 1969. It is recommended that the Plan be modified to address this issue, and that the Forest Service identifies the point in the decision making process where social and economic impacts have been evaluated and provide us with documentation for review.

Response: The *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* contains an analysis of the socioeconomic impacts of harvesting restrictions. This FEIS provides a socioeconomic analysis. It is difficult to determine impacts of one element of the Forest Plan. RCW guidelines are not the sole cause of reduced timber harvesting.

193 - It is a concern that the draft Plan exceeds anticipated funding levels; therefore, it is recommended that the final Plan reflect that which can be realistically accomplished given expected funding.

Response: Forest Plan alternatives are developed to respond to the opportunities and needs to protect, manage, and develop forest resources. While they must be within reason, budgets are not a constraining factor. No one element of the Proposed Forest Plan is out of reason. In any one year, one resource area may be fully funded while others may not be funded.

197 - After studying the DEIS, it was noticed that the alternatives that severely restrict ORV use (Alternatives B, D, and E) also provide fewer jobs to the community, less income to the Forest Service and to local governments, and have lower cost to benefit ratios than the alternatives that are ORV friendly. Not sure if the impact to the local economies that benefit from ORV use were taken into account by this study.

Response: Off-highway vehicle use outputs varied little between alternatives. We expect to have a similar amount of use in each alternative, but the location and manor of use will change. The costs and benefits of the alternatives were a function of total recreation use and timber production.

198 - Table 3.32 clearly demonstrates that the NFs in FL have gone away from timber production and into environmental protection much to the detriment of the local economies joining the forests.

Response: During the past two decades, the Forest Service has moved from a philosophy of commodity production to one of ecosystem management, where the benefits of other resources are just as important as the production of timber.

201 - Plan, page 2-1, para. 5: This process is one that is fundamental to ecosystem management and sustainability because of its integration with the public at large. That is where program support and valued services are realized.

Response: Thank you for your comment. An ecological approach requires public participation, since people are as much a part of the landscape as plants and animals.

206 - Cooperative agreements with adjacent landowners, both public and private, need to be pursued vigorously.

Response: Thank you for your comment. This is one of our forestwide goals.

206 - ``Economic values" of the services provided naturally by functioning ecosystems—The final Plan should adopt such measures to fully gauge all the values of all our national forests.

Response: While there is an inherent value in a functioning ecosystem, we do not have the capability to assign an economic value to this on a forest level.

209 - Economics cannot be the guiding factor for the future uses of our forests.

Response: We agree; sustainability of the resources is the guiding factor.

216 - Plan, page 2-3, FWG 5: The Forest Service should not be involved in creating solutions for economic development of local communities.

Response: It is part of the Forest Service mission, included in FSM 1020.21, to help states and communities to wisely use the forests to promote rural economic development and a quality rural environment, including providing work, training, and education to the unemployed, underemployed, elderly, youth, and disadvantaged; providing technical and financial assistance to cities and communities to improve their natural environment by planting trees and caring for their forests; and providing technical and financial assistance to State and private forest landowners to encourage good stewardship and land management practices.

224 - Forestwide DFCs. The proposed plan is inconsistent with maintaining the economic benefit to local economies from wood products.

Response: The preferred alternative allows for harvesting wood products under an uneven-aged system of harvesting. This will sustain a continuous yield of forest products.

225 - Forestwide Goals - Add a Goal 20: Optimize the value of current and future timber and non-timber forest products using market-based incentives as they become available.

Response: A goal such as you suggest places a higher priority on commodity production than other resources. We seek a balance between commodity production, providing services, and protecting resources.

225 - Forestwide Objectives - Modify Objective 2: Ensure innovative and aggressive public involvement in national forest management by developing partnership documents with other national forests and public groups and with local, State, and other Federal agencies, tribal governments, and Forest Stewardship Council-accredited forest certifiers.

Response: We felt the term *other public groups* encompasses all other possible partners. It would be unfair to mention one and not all the others, so instead we opted to use a term that would included them all.

225 - Chapter 5: Add an additional point under examples of Plan Implementation list (page 5-10): Forest Certification Agreements and Conditions.

Response: Forest Certification Agreements and Conditions is not one of the implementation guides we use to implement projects.

227, 229 - FWG 5: Support the concept of NFs in FL contributing to the social and economic well-being of local communities, concerned with the statement pertaining to the promotion of ``economic development" and request that this statement be deleted.

Response: There are numerous innovative and creative ways to assist in the economic development of counties; the Forest Plan does not specify or dictate these ways, since many remain undiscovered. We will help identify these ways and participate in them.

227, 229 - Plan, page 5-4, Goal 11: The item to measure doesn't answer the question, although we do support education information.

Response: The ID Team debated this question in-depth. Short of implementing user surveys which require extensive review by Office of Personnel Management, it is difficult to measure the values and level of understanding of our visitors. We decided to make an assumption that there is a direct correlation between a visitor's understanding and the quality of interpretive signs.

304 - The increase in popularity of these ATVs should be embraced as a way to generate income to further protect our endangered species, and also attract more tourists.

Response: ATVs are a popular and increasing form of recreation on the national forests. The Forest Plan seeks to protect sensitive soil, water, and vegetation resources by prohibiting cross-country travel. ATVs and other OHVs may continue to use the open, numbered roads and unmarked travelways. After the 2-year public involvement process, there will be designated trails in some areas as well as the open, numbered roads and unmarked travelways.

22 - Bicycle riding is one use for local rural communities to improve their economic base.

34 - Bike trails have a positive impact on the economy of the communities surrounding them.

80 - Partnerships are an excellent idea.

Response: We agree. Thank you for your comment.

217 - The Forest Service must recognize the human impacts of its policy.

220 - An economic analysis should be conducted to determine the impact of this plan on local forest dependent economies.

Response: The FEIS discussed the impacts of the alternatives on the socioeconomic well-being of the communities in the forest area.

Ecology/Ecosystem Management

91 - Add a policy which states ``Assist government agencies in restoration and protection of natural systems and native wildlife habitat affecting national forests, including the Ocklawaha River."

Response: National Forests in Florida seeks to work cooperatively with other agencies, and we hope that our restoration efforts will serve as a model to other State and Federal land managing agencies. Language has been added to support restoration and parnership in this area. An EIS is being prepared for the Army Corps of Engineers by the Florida Department of Environmental Protection.

104 - Aggressively expand the program of prescribed burning, longleaf ecosystem restoration, midstory hardwood control and early, heavy thinnings in dense pine stands.

Response: The preferred alternative will accomplish these actions in an ecological manner.

104 - Determine practices for ecosystem restoration projects individually for each project and in consultation with the USFWS, based on current research, restoration needs and long term benefits.

Response: We agree with this concept, have used it in the past, and will continue to use it as we implement the Forest Plan.

200 - I earnestly recommend compiling a restoration plan for that portion of the Ocklawaha River (now know as Rodman Reservoir).

Response: The Forest Plan does not make site-specific decisions or analysis on such projects. Language has been added to support restoration in this area. An EIS is being prepared for the Army Corps of Engineers by the Florida Department of Environmental Protection.

201 - Plan, page 2-3, para. 10: What you're really talking about here is the native biodiversity and ecological integrity of the longleaf pine-wiregrass community, even if such integrity exists in varying, measurable degrees.

Response: Yes, but it is not limited to the longleaf pine-wiregrass community.

201 - Plan, page 2-3, para. 2: Ecosystem impairment needs measures by means of various kinds of indicators.

Response: We agree and have included monitoring ecosystem health in Chapter 5 in the Forest Plan. What indicators are used to monitor ecosystem health may change as we implement the Forest Plan and begin looking at the monitoring results.

201 - Plan, page 2-4, para. 4: This might better read ``. . . emphasizing how sand pine clearcutting, restoration of viable stand ages, and prescribed fire. . . ."

Response: We believe our goal incorporates your thought or is at the least well within the intent of it.

201 - Plan, page 3-18, para. 4: Objectives related to this goal must be relative to reference conditions, perhaps as identified in research natural areas, and involve restoration of natural community composition and other ecological measures.

Response: We will use all undisturbed areas available to determine which sites qualify for restoration and what they should look like.

201 - Plan, page 3-18, para. 5: This must require some kind of monitoring of reference conditions (i.e., in the reference area).

Response: This would be nice to do, but we will not have the resources to make this a high priority. We will instead use our resource specialists to make this determination.

201 - D-50 thru D-61: Seems like a good basis for development of monitoring objectives to determine reference conditions, and apply those data to development of objectives for a broad range of conservation and restoration goals.
Response: We will be able to use these monitoring tasks to help evaluate the progress of restoration goals.

201 - Plan, pages 4-38 to 4-49: This probably includes determination of reference conditions for important ecological variables.

Response: These are desired future conditions and are a reference for what is desired in certain ecological variables.

201 - D-11 & D-16: These involve determination and comparison to reference conditions.

Response: The reference will be the desired future conditions, goals, and objectives.

206 - Carrying capacity for ``use" areas should be designated and monitored with a priority on preservation.

Response: We agree with this concept; and it is being done to varying degrees now (Wright Lake closed two seasons).

209 - Corridors must be established which will allow the movement of species from one ecosystem to another.

Response: We are trying to do this where we can (Pinhook Swamp). We also understand the need to consider this concept on a much smaller scale as well.

216 - Would like to see overall management on a much larger scale, at the compartment and larger levels.

Response: The Forest Plan provides forestwide, as well as management area, direction that is on a large scale. Projects are proposed based on goals, objectives, and desired future conditions in the Forest Plan. The scale of the analysis depends on the scope of the project and relationship to other activities.

218 - Plan, page 1-1, Introduction, para. 3: The Forest Service in cooperation with its partners, must also look beyond the boundaries of the NFs in FL and address issues in the context of entire ecosystems.

Response: Yes, we understand the importance of doing this. Partnerships offer us a way to be effective in reaching beyond the national forest boundary.

219 - Plan, Chapter 1: Strongly supports the adaptive management approach on NFs as explained in chapter one of the LRMP.

Response: Thank you for your input.

220 - There is an opportunity for the national forests to contribute more significantly to the statewide economy through recreation and forestry.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

220 - Slash and loblolly are native species and should have their appropriate presence on the forests, particularly in wetter flatwoods.

Response: We agree and plan to retain and manage these species on appropriate sites.

221 - Including the restoration of the Rodman area back to the free-flowing Ocklawaha River is a timely inclusion in the Plan.

Response: Language has been included to support restoration in partnership with the State of Florida. An EIS is being prepared for the Army Corps of Engineers by the Florida DEP for this project.

223 - Emphasize restoration forestry.
Response: One of our goals is to restore and maintain ecosystems within their natural range of variation. This should result in ecosystems which reflect the native forest structure. Prescribed fire will be used to maintain historic fire intervals.

223 - Utilize landscape ecology.

Response: We believe the Forest Plan makes a step in that direction.

227 - Strongly urge the Forest Service to amend the draft plan to recognize the ORRP, and the NFF commitment to play a major role in the ORRP in close partnership with the State of Florida.

227, 229 - Request that the proposed plan and DEIS be amended to describe the Forest Service's support for and further contribution of the State of Florida's Ocklawaha River Restoration Project (ORRP).

Response: Language has been added to support restoration and parnership in this area. The Forest Plan does not make site-specific decisions or analysis on such projects. An EIS is being prepared for the Army Corps of Engineers by the Florida Department of Environmental Protection. Existing improvements are authorized to the State of Florida.

227, 229 - Plan, page 4-30, Standard 4.2-9: Restoration in Impassable Bay should use fire. Evaluate whether to rehabilitate beds in slash pine plantations. Hand plant longleaf pine. Allow mixed stands, depending on fire regime. The goal is to use the least impactive restoration method. Ecological quality, not visual quality, should dictate size of openings.

Response: We agree that restoration of Impassible Bay should utilize prescribed fire. Impassable Bay is a landtype association called Pinhook Basin Shrub Swamp, and it would not be planted in longleaf

pine (keeping in mind that the MA boundary for Impassable Bay now follows the landtype association lines, so the pine flatwoods are not included). And since Impassable Bay is in a MA that emphasizes recreation (4.1), visual quality is an important consideration.

227, 229 - DEIS, page 3-19: Should restoration be in small patches instead of large patches? What should the patch size be?

Response: There is no absolute patch size. A wide range is found in nature and the current patch size structure on the forest is predominantly in the 10-50 acre size.

227, 229 - The Forest Service still does not have a comprehensive inventory of the abundance, diversity and distribution of native plant and wildlife species on the NFs in FL. We believe such an inventory is essential for adequate management and conservation of these resources, as well as for sound management of other multiple-use resources on the NFs in FL.

Response: We agree that this information is needed. However, decisions must be made based on the best information we have on hand.

227, 229 - Plan, pages 5-8-5-9: The Forest Service needs to develop a monitoring strategy that monitors plant and animal species at several hierarchical levels.

Response: We agree; and the Forest Service does do some of this as budgets allow (``Partners in Flight" program).

84 - The Forest Service has an obligation to manage a significant portion of its longleaf pine landscapes as an extremely valuable resource that transcends its value for commodity based timber production.

124 - Emphasis on restoration and ecologically sound management is welcome.

Response: Thank you for the comment. Ecosystem management is intended to be the basis for the Forest Plan.

157 - Goal 6: Suggest revising this goal to read, ``To maintain and restore ecosystem composition, structure, and function within the natural range of variability of all native ecosystems on Forest Service lands."

216 - Plan, page 2-3, Forestwide Goal 6: Should be ``To maintain and restore ecosystem composition, structure, and function within the natural range of variability of all the native ecosystems on Forest Service lands."

Response: This goal has been rewritten to reflect this comment.

157 - There is little description of what the goal of slash pine management is—how many acres, where, and whether managed by uneven-aged method or not. Where in the landscape is slash pine thought to have lived, and what are the NFF's projections of its future range under the plan? Forest Service should develop a policy statement about the natural occurrence of slash pine on NFs in FL, as well as plans for managing the species in its natural setting. The same should be done for pond pine (Pinus serotina), which may have been equally as abundant as slash pine in presettlement times.

216 - Would like to see the Forest Service develop a policy statement about the natural occurrence of slash pine on NFs in FL, then their plans for managing the species in its natural setting. Would like to see the Forest Service develop a policy statement about the natural occurrence of pond pine (Pinus serotina) on NFs in FL, then their plans for managing the species in its natural setting.

227, 229 - Believe there is inadequate discussion of slash pine habitats in the draft plan or DEIS. Nowhere do these documents identify the extent of off-site slash pine, either by individual forest or as a whole, nor how it arrived at the number of acres to be restored during the next planning cycle. There is also no discussion in these documents regarding where slash pine habitats historically occurred in the forest ecosystem, or how these ``on-site" slash pine habitats will be managed. If this information is available, it should be disclosed and discussed. Have similar concerns regarding the natural occurrence, ecology and future management of pond pine on the NFs in FL.

Response: In the FEIS, slash pine has its own age class distribution charts so the reader can determine how much slash pine is on the forests. We have also added a table that shows the number of acres by species on each forest. Both of these will show the current status of the tree species on the forests. Slash pine will have limited availability for uneven-aged management and also will be regenerated by the irregular seed-tree method to compare growth rates to uneven-aged management. The intent of several goal statements in the Forest Plan is to manage natural components of ecosystems. Slash pine and pond pine are both indigenous to the national forests and will be managed to maintain their natural role.

197 - Reading the proposed plan, it was felt like a park like condition is trying to be achieved. This is not what the national forests were intended to be. The forests are suppose to be multi-use, productive, useful and enjoyable areas for everyone.

202 - This manager needs to manage the forest as a true forest and not as a Tree Farm.

205 - The forests in Florida are in fact remnant islands of natural areas in the state that have been severely impacted by man. These impacts must be managed to return to historic conditions as much as possible.

Response: We are required to manage these lands in an ecologically sensitive way while at the same time providing for a flow of forest products as well. We have tried to do just that in developing the preferred alternative.

201 - Plan, page 3-20: Different types of managed stands, in and of themselves, will represent different standards of biodiversity conservation. It is most important that these all be known to represent a range of reference conditions, even if some such stands (or management types) don't represent the highest attainable (``reference standard") conditions as regards biodiversity and other aspects of the ecology.

227, 229 - Plan, page 3-29, Exotic Species: Support elimination of the listed exotics and any other which may turn up.

Response: Thank you for your comment.

Biodiversity

152 - Believe returning the forest to a natural diversity will be healthy and valuable for all.

Response: Thank you for your comment. The goal of restoration of native ecosystems is healthy ecosystems.

157 - Our concern: Preservation of biodiversity is one of the plan's stated goals, but the approach to this goal is not entirely coherent.

Response: Forestwide and management area standards, when implemented, will help achieve biodiversity. Restoration of native ecosystems, uneven-aged management, and more areas placed in

preservation-oriented management areas will create a healthier forest reflective of historical ecosystems.

157 - Goals 7 & 8, Biodiversity: The Plan should explicitly acknowledge the NF's role in biodiversity preservation, and pull together into one place the many activities in the new Plan that directly serves this goal.

Response: We did not feel it necessary to create a separate section on biodiversity for the forestwide or management area standards, since these standards all work to achieve biodiversity.

157 - Goals 7 & 8, Biodiversity: The Plan should explicitly acknowledge the NF's role in biodiversity preservation, and pull together into one place the many activities in the new Plan that directly serves this goal.

Response: We did not feel it necessary to create a separate section on biodiversity for the forestwide or management area standards, since these standards all work to achieve biodiversity.

192 - Most disturbing is that the agency is willing to take this risk [uneven-aged management] for purely political reasons and non-scientific reasons: to deal with, as Forest Service staff in Florida has stated, ``public opposition to tree farms". Other disturbing reasons given were ``to provide a habitat not found on private lands". The Forest Service mission is not to fulfill gaps as the agency sees it, between public and private lands.

Response: The National Forest Management Act states that we are to ``provide for diversity of plant and animal communities." Our mission is summarized in FSM 1020.21. Two parts of this mission include: (1) Advocating a conservation ethic in promoting health, productivity, diversity, and beauty of forests and associated lands. (2) Listening to people and responding to their diverse needs in making decisions.

201 - We take for granted or overlook the numerous industries based on biodiversity, ranging from medicines and textiles to tourism and entertainment. For this reason, the value of biodiversity over the long term is perhaps disastrously underestimated.

Response: We agree that the potential values and benefits of biodiversity are perhaps underestimated. Because those values, benefits, and products have not been developed on a commercial scale, we cannot assign economic values to them.

201 - Plan, page 2-4, para. 2: This might better read ``. . . to recover and sustain biodiversity, including a broad representation of ecologically healthy natural communities, and viable populations of. . . ."

Response: Goal 9 is to manage habitat conditions to ``recover and sustain viable populations of all native species"; this covers ALL ecosystems, not just a broad representation, as your rewording suggests.

201 - This seems like a good application for biodiversity-based indicators developed through measurement of appropriate reference conditions.

Response: Thank you for your comment.

209 - Fragmentation must be eliminated along with uses which negatively impact the biodiversity and health of the forests.

Response: More areas have been placed in management areas unsuitable for timber production; many of these are primitive or remote, and the desired future condition is to have fewer roads. This will lessen fragmentation. In addition, uses that would negatively impact biodiversity and forest health would not be permitted.

209 - Set aside biological reserves with the restoration of biological diversity.

Response: More areas have been placed in management areas unsuitable for timber production than in previous plans. Special interest areas; remote wetlands; minimum development, nonmotorized; and wilderness areas all act as small biological reserves.

209 - Restore native flora & fauna with the reintroduction of such extirpated species as the Florida panther & red wolf.

Response: These two species are listed in the forestwide standards sections as target species for reintroduction.

216 - Urge the Forest Service to more clearly specify its biodiversity preservation mandate as a Forestwide DFC.

Response: Wording has been added to clarify this.

216 - Would like to see a biodiversity preservation statement of the type prefacing any LRMP for NFs in FL could contain some of the following facts and details (see comment letter).

Response: Thank you for your comment. Biodiversity issues have been expanded in the Forest Plan and FEIS, and included in the ``Introduction'' to the Forest Plan.

216, 223 - Large areas should be set aside to protect and restore biodiversity at the species level, community level, and ecosystem level.

Response: Many areas have been set aside in each alternative such as wilderness areas, special interest areas, and research natural areas. In many cases, protecting and restoring biodiversity requires active management in ecosystems that have been disturbed or protected from disturbance.

222 - I ask that you not only express the intent to conserve and protect these resources but put real effort into following through and expanding on that aspect of your forest management plan.

Response: We think that implementation of the forestwide and management area standards will follow through on the intent of our goals and objectives.

222 - I ask that you not only conserve and protect, but also restore, biodiversity to the forest to the greatest extent possible: more uneven-aged stands; more natural gradations from one stand to the next; more continuity without interruption by outholdings and exploitative uses; less fragmentation; and less disruption by roads and vehicular travel.
Response: The Forest Plan emphasizes the restoration of native species and restoration of the ecosystem composition, structure, and function within the natural range of variability. We feel this addresses your concern of restoring biodiversity.

222 - Please work to establish what the original (preColumbian) condition and species composition of the forest must have been; what the native species on most sites must have been; educate managers and the public on this topic; train managers to manage for the biodiversity present then; and expand the extent of forest service effort dedicated to the support of this type of forest.

Response: All of the efforts you suggest are incorporated into the Forest Plan. Restoring the ecosystem composition and structure within its natural range of variability will result in a healthy, uneven-aged forest.

226 - There should be large core reserves where longleaf forests can develop into old growth qualities. It should be a clear mandate to reduce the scarcity of longleaf forests that have the qualities of the original forest within the state and focus on producing more of them.

Response: Restoration efforts should bring about more areas of longleaf pine; and some parts of those will develop into old growth. Designated wilderness areas, wilderness study areas, and remote parts of the forests serve as large core areas where ecosystems can develop without being heavily influenced by human activity.

227, 229 - Request that a specific FWG be developed be developed and added that specifically details the NFs in FL's commitment to conserve and protect biodiversity on the NFs in FL.

Response: We feel our commitment to conserve and protect biodiversity is reflected in the goals, objectives, and standards in the Forest Plan. Based on public comment, we expanded the statements and discussion on biodiversity.

227, 229 - Request development of a specific forestwide objective pertaining to identification, management, and conservation of areas known to be important for the conservation of biodiversity. Forestwide Objective 9 attempts to do this for scrub habitats, but is too vague to provide any meaningful insights as to how this objective will be carried out.

Response: We believe these important areas were identified in the revision process and incorporated into management areas which will ensure their protection.

227, 229 - There are no forestwide objectives pertaining to management of other special areas on the NFF that provide essential habitat for endemic, rare or relict plants and animals, such as the Munson Sandhills and Post Office Bay in the Apalachicola NF. Request that an objective be developed that recognizes these important community types, and describes measurable steps necessary to accomplish the goal of protecting biodiversity.

Response: Special areas require management area standards rather than forestwide standards, since these areas are unique enough that a forestwide standard would be too broad. Each area must be looked at for its unique values.

227, 229 - Standard VG-1: Support and commend the Forest Service for its efforts to identify and protect important botanical communities as set forth in this standard.

Response: Thank you for your comment and the support it expresses.

227, 229 - The statement in paragraph 8 seems to limit the NFs in FL commitment to protect biodiversity.

Response: We feel our commitment to conserve and protect biodiversity is reflected in forestwide Goals 5-10.

233 - National Forests in Florida should be managed for old growth, to eventually simulate the primary forests destroyed by our ancestors.
Response: Areas of old growth on the forest are being protected, and other areas eventually will become old growth under an uneven-aged system.

195 - Feel too little emphasis is given to the Forest Service's mandated role in protecting all elements of biodiversity.

222 - I ask that you emphasize biodiversity more in the forest plan—to the greatest extent possible.

Response: Biodiversity issues have been expanded upon in the Forest Plan and the FEIS.

227, 229 - Request that the Final DFC section be amended to include an explicit recognition of the NFF's role in maintaining natural biodiversity.

227, 229 - FWG 8: This statement recognizes the Forest Service mandate to conserve and protect biodiversity, it understates the biodiversity requirements of the NFMA, 16 USC section 1604(g)(3)(B).

Response: We feel our commitment to conserve and protect biodiversity is reflected in the goals, objectives, and standards in the Forest Plan.

Research/Monitoring

26 - Should have included more people with research experience in the forest or in forestry management.

Response: The Planning team consists of employees of *National Forests in Florida*, spanning all disciplines (*see* ``List of Preparers'') and representing many years of managing Florida's ecosystems. In addition, a wide range of internal and external scientists provide input and comment.

41 - Establish systems to monitor changes, make reports of threats to resources, and long term plans to deal with threats.

Response: Several items in the Forest Plan's monitoring program cover these items. We view the Forest Plan as a long-term plan to deal with these issues.

70 - Become a leader in developing genetically improved tree species and making them available for a profit to industries through adequately funded seed and seedling nurseries.

Response: This is outside the scope of the Forest Plan. This is a mission of the State and Private Forestry branch of the Forest Service.

70 - Research should include making maximum utilization of other than pine fibers.

Response: This is not one of the research needs specifically identified as top priority for *National Forests in Florida*.

80 - Whatever policy is implemented it will be reviewed periodically.

Response: *National Forests in Florida* produces a monitoring report annually, as well as a 5-year monitoring report. This will track whether we are achieving the goals and objectives or indicate if we need to change direction.

91 - Told by Forest Service planners that the (monitoring) tasks listed to accomplishment goals may or may not be done. Are you planning to do the tasks or are they just options which may be utilized?

Response: Table 5.1 in the Forest Plan is the monitoring program and it is intended to be carried out. The monitoring task sheets are supplemental information to provide more detail in how these items may be specifically monitored. These may change over time depending on technology, issues, priorities, and budgets.

109 - Research Natural Areas MA 2.1 in the Apalachicola may be joined up, this is most desirable for wildlife.

Response: This was considered in one alternative but was not selected.

150 - Monitoring the percent cover of shrubs and grasses would also give you an indication of the effectiveness of your program.

Response: This might be done as part of the monitoring program. We are interested in the changes occurring on and near the forest floor.

157 - Monitoring, evaluation, research section (Chap. 5) is probably the weakest part of the plan. There is essentially no plan for research beyond the very general questions on p. 5-10.

Response: We have expanded the monitoring section. We identified general research needs in the Forest Plan; however, research is another branch of the Forest Service. Needs also will be determined annually as we monitor the Forest Plan.

157 - Adaptive management means simultaneously trying different management techniques in an experimental design, not just sequentially.

Response: Yes, it does. We must have some rationale behind what we propose, must be in line with forest objectives, and must be cost-effective. We are willing to try several different approaches but need to have some research support for what we are doing.

157 - Suggest monitoring be segregated into ``Bureaucratic Record Keeping'' and ``Monitoring and Adaptive Management.''

Response: This sounds easy, but sometimes what appears to be meaningless has value to someone else. We do understand what you are saying and are striving to eliminate waste where we can.

157 - Monitoring activities listed in Chapter 5 and Appendix D should be classified into three categories: (1) bureaucratic book-keeping; (2) management equivalents of treatment variables are those new practices or changed practices which are supposed to move the forest toward certain goals, or predicted to cause certain outcomes; equivalents of response variables are the hoped-for outcomes of the treatment in (2) and these are the changes in vegetation, forest age-structure, population health of endangered species, changes in timber volume, etc. which are the goals of this plan

Response: This is a good way to classify some applications of adaptive management. We will consider using this classification scheme in our monitoring program.

157 - Because monitoring would generate a large amount of information, a well-designed and managed database would be required. The database should also be addressed in this chapter.

Response: This is a technical point that is beyond the scope of planning we are doing in the Forest Plan. This will be worked out during the implementation of the Forest Plan.

157 - For very little extra money, the USFS could thus get sound information about the effects of its normal management activities. All that is requires is that several variants of an activity be applied simultaneously in a statistically sound design.

Response: We will certainly strive to do this.

201 - Plan, page 1-2, para. 2: Ideally, the Forest Plan's goals, objectives and overall management direction are reflected in the annual budgeting process.

Response: This is true to some extent. Reality is that there is usually not enough money to do what is planned. We must strive to do the most in both quantity and quality with what we are budgeted.

201 - D-17: Establishment of more RNAs might depend upon the need for establishing reference conditions for attainment of management objectives, in addition to serving other conservation goals.
Response: Some of our monitoring tasks will establish baseline information; and we may be able to form reference conditions from this, as well as learning if our objectives are being accomplished.

201 - Plan, pages 4-38 to 4-49: Areas such as longleaf and slash pine, and sand pine and oak scrub areas, where adaptive management can be applied, might actually serve as test areas. It may be possible for some indicators to succeed in attaining values similar to reference conditions.

Response: We agree. These management areas will be crucial to implementing adaptive management.

201 - Plan, page 1-6, para. 7: Assemblages of species within natural communities can constitute individual metrics which also serve as valuable indicators of ecological change.

Response: We agree. Our regulations require the use of indicator species which we identified in Chapter 5. These are those species for which we collect population specific data and have a historic record. We also have included natural communities with species assemblages in Chapter 5 which we will monitor as well.

216 - Urge the Forest Service to underwrite or otherwise promote scientific research on the overall ecological impacts (positive or negative) of the honeybee with the intention of using information to

make future decisions about whether the practice of permitting apiarists to truck in hundreds of hives annually should be continued or stopped.

Response: Although this did not make our list of research needs as presented in the Forest Plan, it could be considered during a yearly evaluation of needs should it become more of an issue.

226 - The Forest Service should conduct research and improve the data and analysis and planning within the forests to assure maintenance of viable populations of regional biodiversity.

Response: We do collect data and conduct research on biodiversity issues, but there is always more that can be done. We must do what we feel is the most productive use of the resources we have to work with.

227, 229 - Plan, page 5-2, 3rd para.: It would be better to state the actual percentage of decisions that will be reviewed.

Response: We believe that the decisions made may vary greatly from year to year and some years we would monitor more decisions than others. We would prefer to have the flexibility to choose from a range of decisions in any given year.

227, 229 - Plan, page 5-3: The primary problem with the monitoring program is that is does not monitor achievement of the components of the DFCs.

Response: Monitoring all the components of a DFC would be an all-consuming task for which we do not have the resources. Instead, we have focused on monitoring the goals, objectives, and standards to ensure implementation is moving us toward the DFCs.

227, 229 - Plan, pages 5-3-5-7: The terms ``Baseline'' and ``Range'' in the ``Range'' portion of the Monitoring Program are not quantified and need to be.

Response: *Baseline* means that we do not know what would be an acceptable level; but we are monitoring to determine a baseline level from which to work. The objective ranges are stated in Chapter 2 in the Forest Plan.

227, 229 - Plan, page 5-3: Several of the monitoring items are irrelevant to the plan and should be deleted. Examples are the first five monitoring questions in the program. How would you change the plan based on their monitoring results?

Response: These items monitor the first five goals of the Forest Plan. The human dimension is an integral part of the Forest Plan. Monitoring public participation and satisfaction should give us some indication of how well the Forest Plan provides for public participation.

229 - Request that the Forest Service develop a working group with the public and scientific community to revise the monitoring program of the Plan so that it is better correlated with the DFCs.

Response: Thank you for your comment. We will consider this as we begin to implement and monitor the Forest Plan.

229 - DEIS, page 3-21: The Forest Service should fund additional research to better determine the appropriate size of cc [clearcuts] to mimic historic fires, while still providing for scrub jays.

Response: There is some research on that going on now. We will continue to collect data as budgets allow and hopefully will better understand the correlation between clearcut size and scrub-jay numbers.

230 - Plan, page 4-17, RNA: 75% motorized is contradictory to designation as a natural area and excessive.

Response: It does not mean RNA will be roaded to that level.

234 - Plan, page 5-3, Table 5.1, VG-15: CISC data - Is this a quantifiable method for estimating richness and composition of understory vegetation? What does an increasing trend indicate?

Response: No, this is not meant to measure richness. We would hope to collect information on the percent cover of wiregrass so that trends could be noticed in stands through time.

234 - I would like to see a system implemented wherein the abundance and temporal trends of all plant species were recorded.

Response: This would be nice to have but is not within our budget at this time. If we can monitor trends in longleaf pine and wiregrass that would be a first but very important step.

310 - Concerned that some of the relevant goals and objectives may not be translated into meaningful actions leading to approved access and usage areas.

Response: We believe the standards and guidelines in the Forest Plan adequately translate our forestwide goals and objectives into actions which can be implemented and monitored. The monitoring program was developed specifically to track accomplishment of goals and objectives.

41 - Increase scientific research.

124 - Research needs (5-9). This section is very weak.

Response: The Forest Plan does not make detailed research proposals. The research needs section lists general topics as high priority for research. The research branch of the Forest Service provides leadership in research.

70 - Strengthen the role of research and study of southern yellow pine uneven age management techniques and removal of dead pine distillate wood before taking management actions.

202 - More research is needed to enable managers to make knowledgeable decisions about many aspects of true forest management.

216 - Plan, page 3-23, FG-33: Urge the Forest Service to support or encourage scientific research that demonstrates whether certain levels of lightered stump extraction are possible without harming vertebrate populations in different types of forest stands.

Response: We plan to work with research, as funds allow, in designing monitoring to provide information for adaptive management. We will monitor our application of uneven-aged management as we implement it, but we must defer to others the stumpwood removal study for now.

Editorial

3 - Delete from Standard MI-3 the phrase ``or within ¼ mile of a homesite."

Response: This standard is included to address safety of nearby residents, especially young children who use this type of area for play.

3 - MI-6 should be reworded to require reclamation of inactive borrow pits in accordance with State and County regulations.

Response: The wording has been changed.

70 - Plan, page 1-1, para. 4: ``. . . all factors are considered before initiating change . . ." except no mention of the forest user or timber industry is listed.

Response: Should the results of monitoring indicate a need for change, the Forest Plan amendment process would allow for review and comment from all user groups.

93 - Some tables would be more readily understood if instructions on how to use them and explanations of the terms, numbers, and acronyms used in them, were provided at appropriate places in the Plan, such as the introduction, or as headings, footnotes, and cross references with each table.

Response: We have included an explanation in the introduction.

108 - Plan (1985), page IV-23, Management Practices, Special Use Management (Nonrecreation), Standards & Guidelines A: Suggest the following change ``. . . demonstrated public need, cannot REASONABLY be. . . ."

Response: In the Revised Forest Plan, similar wording has been added.

201 - Plan, page 2-3, para. 11: This might read better ``. . . and groundwater to conserve, protect or restore their original values. . . ."

Response: Thank you for your comment. We feel the goal is adequate in its present form.

201 - Plan, page 3-23, para. 5: This might better read ``. . . not plant species capable of invading adjacent land, including the Florida Pest Plant Council's List of Florida's Most Invasive Species."

Response: Thank you for your comment. We feel the statement is adequate as written.

201 - Excellent idea to include a glossary appended to the plan.

Response: Thank you for your comment.

219 - DEIS, page 3-21, para. 3: Suggest that the term ``dog-hair thick" be included in the glossary.

Response: This is term has been changed.

229 - The LRMP and EIS wiregrass references should include the three dropseeds which carry fire in same way as wiregrass. Believe all the NFs have both wiregrass and the dropseeds.

Response: The longleaf pine-wiregrass ecosystem contains a vast array of plants and *wiregrass* is used as a general term to describe the type of understory.

310 - Plan, FWO 11, page 2-5: Suggest the inclusion of ``one motorized recreation area" in the second sentence.

Response: FWO 11 refers to making facilities and sites accessible to persons with disabilities, it does not include making specific references to some types of recreation use.

3 - Chapter 3 contains several references to the term ``borrow pit." Suggest that the term be defined in the Glossary.

88 - ``Periods," a definition for this should be included in the text and glossary.

88, 103 - Add ``RCW Group" to the definitions section.

103 - Plan, pages 3-25 & 26, WL-1: Add the following at the end of the last sentence in WL-1, ``but no further than ¾ mile from the cluster center."

Response: This has been added.

88 - DEIS, page 3-52, para. 3: Change Beyer et al. citation from ``(unpublished data)'' to ``(1996).'' Change ``Fran James (pers. comm.)'' to ``James (1997).''

88, 103 - Drop ``cluster site'' in definition and use only the term ``cluster'' throughout.

Response: This has been changed.

Alternatives

10 - Wakulla County supports Alternative C with a caveat regarding the use of cattle grazing.

Response: Thank you for your comment. Standards and guidelines are incorporated to address your concerns. See Record of Decision for rationale for the selected alternative.

41 - Alternative E contains many provisions that present a major threat to the integrity of the forest ecosystem.

Response: We do not agree. See Record of Decision for rationale for the selected alternative.

104 - The Liberty County School Board asks that the Forest Service to adopt their proposal in its entirety.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative and the FEIS under ``Alternatives Not Considered in Detail.''

155 - Refer to the comments received from the Southern Timber Purchasers Council and the Florida Forestry Association.

Response: Thank you for your comments. We have received excellent comments from both the Southern Timber Purchasers Council and the Florida Forestry Association, and some of their suggestions were incorporated. Stumping, however, will not be permitted on the forests except in an administrative study.

198 - Recommend Alternative C be adopted in order to provide some badly needed income for the counties that have National Forests located in them.

Response: All alternatives will contribute to the economic base of counties. The Forest Plan seeks to encourage creative solutions for economic development by looking at other resources, not just timber production.

3 - Support Alternative E.

11 - Alternative E would ensure many attributes for the logger, wilderness lover, wildlife lover, naturalist and recreationist will be maintained and even enhanced to some degree.

21 - Alternative E offers the best opportunity for balancing resource protection and utilization.

107 - Alternative E includes desirable features would like to see in Alternative B; use of shelterwood method, additional acres restored to longleaf pine, and land designated for management as early scrub oak to provide habitat for scrub jays.

110 - Concurs with the choice of Alternative E as the preferred approach.

121 - Favor the draft response developed by the [Florida Forestry] Association known as Modified Alternative E (attached copy of Florida Forestry Assn. modified Alternative E).

145 - Support Alternative E. Alternative E is the most comprehensive of the alts. because it incorporates DFC 9.2, Forest/Urban Interface.

154 - Support the Coastal Plains Institute and Land Conservancy's recommendations to the LRMP for NFs in FL.

157 - NFs in FL is to be commended for a generally excellent plan, whose direction and principles are strongly supported by our organization.

162 - Proposed plan is in compliance with the Marion County Comprehensive Plan, and have no further comments.

201 - Plan, page 2-5: These, for the most part, are well stated management objectives.

219 - Support Alternative E, as the best of the five alternatives considered, but request that it be altered to accept suggestions. Plan, pages 2-1 to 2-3: Agree with the description of the forestwide DFCs. Plan, Chapter 5: Agree entirely with is chapter as written.

220 - We support your ``long-term'' view of managing the forest.

232 - The Nature Conservancy strongly supports the new management direction of the past few years and the general direction outlines in the Proposed Plan

278, 282 - Please do not adopt the current plan as it is. With some revision the plan could benefit all involved.

283 - I reject the plan, in its entirety.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

13 - Supports Alternative D as it appears to minimize environmental damage in the forests.

205 - Supports primitive lands additions in alternative D. Alternative D appears to be the most favorable to me. The potential for old growth is greatest in alternative D supports this.

206 - Support alternative D.

216 - Strong favors Alternative D.

227, 229 - Strongly request that the final plan adopt the management area maps corresponding to Alternative D in the DEIS as modified below.

227, 229 - For Alternative D, support the MA designations on the Apalachicola RD.

227, 229 - On the Wakulla RD, prefer the MA allocations shown in Alternative E, except for the Ditch Bay area which should be designated as MA 4.1 and Leon Sinks which should be expanded from its present size as it is in Alternative D.

227, 229 - Alternative D is the best choice for the Ocala NF.

233 - Minimize timber production, instituting Alternative D.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

18 - Support Alternative A and Alternative C.

269 - Support Alternative A and strongly oppose Alternatives B and D.

285, 286 - The plan that has been in use for the past 15 years was a fair plan for everybody.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

33 - Recommend Planning Alternative B for the Apalachicola NF.

107 - Prefer Alternative B because it eases into uneven-aged management.

150 - Alternative B has some aspects I prefer to alternative E, but E is a good compromise. The items I like better in alternative B are: lower projected sediment yields, restriction of motorized vehicles to roads and designated trails, fewer miles of road reconstruction, lower pine thinnings, fewer acres of shelterwood, and more potential old growth.

195 - The choice of Alternative B would do more toward protecting the natural resource while providing other social and economic benefits.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

101 - Strongly support the proposal by the Liberty County School Board that the Forest Service modify the RCW guidelines on the basis of the best scientific and commercial data available.

102 - The Wakulla County School Board fully supports the proposal of the Wakulla County School District, and asks that the Forest Service adopt that proposal in its entirety.

151 - Franklin County Board of County Commissioners fully supports the proposal of the Liberty County School District and asks that the U.S. Forest Service adopt that proposal in its entirety.

158 - The Gadsden County Board of County Commissioners fully supports the proposal of the Liberty County School District, and asks that the US Forest Service adopt that proposal in its entirety.

159 - Support the Liberty County School District's proposal which emphasizes the use of science in decision-making along with the recognition of the economic and social effects of management.

191 - The School Board of Columbia County fully supports the proposal of the Liberty County School District and asks that the Forest Service adopt that proposal in its entirety.

207 - The Taylor County Board of County Commissioners fully supports the proposal of the Liberty County School District and asks that the Forest Service adopt that proposal in its entirety.

Response: The Forest Service mission includes helping states and communities to wisely use the forests to promote rural economic development and a quality rural environment. In developing the Forest Plan, we have attempted to incorporate the latest scientific information in our analysis so that decisions could be truly science based.

192 - Recommends a modified Alternative (based on portions of Alternatives C and E) which could best meet the goals and objectives of the forest.

193 - Modified alternative as a substitute for the preferred Alternative E.

224 - We support and ask that you incorporate into the plan the ``Modified Alternative'' that has been developed and presented to you by the Florida Forestry Association.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

192-193 - Modified Alternative: 341 miles reconstructed over 10 years, roads scheduled for closure would not be closed.

203 - Reconstruct 341 miles of roads.

Response: This statement is in support of the amount of road reconstruction estimated to be needed in Alternative C in the EIS.

Outside Scope of Plan Decisions

12 - PETS survey on the southern section of this forest parcel should be taken during one of the intermittent floods, otherwise it would underestimate the density of the local fauna.

Response: Outside the scope of the Forest Plan. This is a site-specific decision to be made by the biologist or botanist preforming the surveys.

18 - DO NOT support the Wild and Scenic Designation for the Sopchoppy due to fears that the designation will unreasonably limit the use of private property along the river.

Response: The Sopchoppy River was studied in a separate study and found eligible and suitable. That study was forwarded to the Chief of the Forest Service in 1994 and recommended for designation, it is now outside the scope of the Forest Plan.

63 - Dedicate three national forests as wildlife fish plant habitat sanctuary areas.

Response: This not within the scope of the Forest Plan or within the mission of the Forest Service.

84 - Encourage a more explicit treatment of potential problems associated with major roads, such as I-10, SR 40, and SR 19.

Response: These roads are not actions proposed in the Forest Plan, and thus the effects were not discussed since there is no proposed action that would bring about a set of effects.

91 - The Draft Plan does not specifically identify problems which currently exist in the NFs in FL . . . current problems should be specifically identified and addressed, such as ORV damage to Penner Pond's march, use of the Florida Trail in Ocala NF by motor vehicles, and the problems caused by outparcels in Ocala NF.

Response: The Forest Plan does not make site-specific, project-level decisions or list specific techniques. Forestwide and management area standards address the issue you mentioned.

160 - NF planning must considered world population projections and future global needs for products and energy. I believe that they every resource plan must acknowledge that without population stabilization our global ecosystem is not sustainable in the long run.
Response: We agree that the expanding global population is key to projecting sustainability of forest resources, but population stabilization is outside the scope of the Forest Plan.

160 - NF planning must consider atmospheric carbon balance and the forest's potential contributions to renewable energy and climate stabilization.

Response: Thank you for your comment. While we may be able to make some generalized statements about the forests' contributions to these issues in the FEIS, we do not have the data or resources to explore these issues in the scope of the Forest Plan.

200 - Some time, some how, some of us have got to get across to the D.O.T.'s of the nation that there MUST NOT be any additional increase in paved routes through our National Forests! The planned 4-laning of Hwy 40 through the Ocala National Forest is unacceptable!

Response: There are no current or future plans to pave any forest highways. The issue of widening State Highway 40 is outside the scope of the Forest Plan.

212 - Areas such as Richloam could be made available to off-highway motorcyclists and ATV riders when the hunting season is closed, or at least portions of Richloam.

Response: The Richloam area is not on national forest land; it is managed by the State of Florida and is therefore not under our control.

215 - The Forest Service must consider the impacts of these roads—including the proposed SR 40 ``improvements"—in a revised DEIS.

Response: These roads are not actions proposed in the Forest Plan; thus the effects were not discussed, since there is no proposed action that would bring about a set of effects. These roads are outside the scope of the Forest Plan.

216 - The Forest Service must keep to its promise in the future NOT TO PAVE FH-13.

Response: The Forest Plan does not make specific, project level decisions such as this. Future plans do not include paving FH 13.

216 - The Forest Service should NOT destroy valuable National Forest habitat near Franklin Pond on the Apalachicola NF for the purpose of establishing a Liberty County Wilderness Crossroads Camp.

Response: The Forest Plan does not make site-specific, project-level decisions such as the Wilderness Camp. This is outside the scope of the Forest Plan.

221 - The degradation of Silver Glen Run has progressed to an abominable state in that motor boat parking lot of partying, renders any enjoyment of the Springs, the FNST, and natural life of the area impossible! Only small boats or canoes and kayaks should be allowed into the run with only small electric motors allowed.

Response: The State of Florida owns the waterways and controls boat speeds and regulations. We have been working with the State on the best way to manage the Salt Springs experience.

226 - The Forest Service should include a landscape ecologist on staff to better understand how to plan and manage its landscapes at the larger scale, including that of the region in its analysis.

Response: The title ``landscape ecologist" does not currently exist as an Office of Personnel Management job series; however, *National Forests in Florida* employs landscape architects, ecologists, and botanists, all of whom have contributed to the development and analysis of the Forest Plan and FEIS.

229 - The Forest Service should require the Navy to purchase inholdings in the Ocala NF that interfere with Forest management and transfer these parcels to the NFs in FL to ameliorate forest ownership problems.
Response: The Forest Service cannot require the Department of the Navy to purchase inholdings. This type of action is not within the scope of the Forest Plan.

233 - Institute a biodiversity tree nursery on each national forest and being experimenting to discover the following: What was the likely tree mix in our now destroyed Florida primary forests?

Response: This is an intriguing possibility, but such as project-level decision would not be made in the Forest Plan. It would require its own proposal, NEPA analysis, and development of alternatives. As such, it is outside the scope of the Forest Plan.

4 - Supports limiting hunting.

89 - Recommend that still hunt buffer zones be established around all private properties within and adjacent to all NFs in FL and that a hunter responsibility rule be enacted; or still hunt areas be changed to small game only areas; or necessary portions of the NFs be removed from the control of the FGFWFC and be administered by the Federal Government.

89 - The major deficiency in the plan is its failure to address hunting within the NFs and the resultant danger to the adjacent residents and other multiple users.

91 - Add a policy which states, ``Review scheduling of large game hunting to assure safe hiking opportunities in NFs throughout the cooler months of the year."

106 - Florida's game laws allow a 2 deer per hunter per day bag limit and no bag limit on crows, do you have to power to amend these laws?

111 - As to the rule proposed to stop cross country vehicle traffic, this will be a big problem if provisions are not made and noted in the rule to provide access near all federal, state, and country roads, because of the Game Dept. strict enforcement of the road hunting rule, this rule started being enforced that you could not shoot from the road right of way.

111 - This rule may change again and if the forest plan could read something like vehicles will be permitted off roadways the distance needed to permit legal hunting and shooting.

111 - Rule or law that someone may not shoot down or across a road in the forest could be used to harass dog hunters. We hunt and shoot from the top of the vehicle, dog boxes, etc., due to better visibility, but more importantly if a shot is taken the bullet is at a downward angle.

169 - The residents of SR-375 are placed in jeopardy of great bodily harm, death, or destruction each year during hunting season; without a buffer zone to protect this area, it's only a matter of time until a fatality will occur.

169 - The use of high-powered rifles should be restricted and not allowed with ½ to 1 mile from private property.

194 - Hope the forests can be zoned so that some areas will be restricted from hunting during traditional hunting seasons, to allow us all to enjoy the forest during the cooler seasons of the year.

235 - We suggest that this `buffering' be applied to all NF lands. An effective solution is to remove `dog hunting' to the next available road such that the `chase' can be terminated before private property becomes involved. Manage the hunting activity on NF lands to include reasonable safeguards for adjacent private lands from the intrusion of hunters and their dogs.

Response: The State of Florida controls all laws and regulations concerning hunting, and we do not have the power to amend State laws.

13 - Power boats should be limited as much as reasonably possible.

109 - Motorized boating speeds and number controls should be controlled/negotiated where possible.

Response: The State of Florida owns all waterways and controls boating speeds and regulations.

19 - Include explicit language in the Plan that will pave the way towards voluntary third-party certification of forest products.

23 - There are sustainable forestry, economic and public relations goals and objectives within the Plan that certification can help achieve.

225 - Add Objective 18: Participate in establishing standards for forest certification in Florida, and evaluate the costs and benefits of undertaking independent third-party certification of Florida's National Forests with particular emphasis on the economic returns available from the sale of certified timber products.

225 - Encourage in the LRMP is the term forest certification of its silvicultural operations. Nowhere is the term mentioned.

Response: The issue of certification is being examined at the national level and is outside the scope of the Forest Plan.

73 - The Navy should be permitted to continue their operation, but they should be careful not to fly low with loud noises outside their area.

80 - The bombing range is an inappropriate use of forest land.

208 - Close the bombing range in the Ocala NF; it is incompatible with protecting the forest habitat.

Response: The Department of the Navy has a special-use permit which is in effect until 1999. Due to the site-specific information required to make an informed decision concerning their future occupancy, this is not a Forest Plan decision. A separate, more detailed analysis will be required. The Navy is currently preparing the environmental analysis to evaluate the future of the range, including such issues as noise, wildlife impacts, and public safety.

73 - Hwy 40 should not be widened through the forest in order to protect the wildlife and people.

84 - The Forest Service aggressively needs to seek mitigation in the form of wildlife underpasses and funds to purchase inholdings within the Ocala NF to reduce the effect of the likely SR 40 expansion.

Response: The expansion of State Highway 40 is not a Forest Plan decision and therefore outside the scope of the Forest Plan. We will continue with acquisitions and other mitigation measures to protect wildlife.

227, 229 - Oppose the widening of SR 40 and US 19 on the Ocala NF, and other road improvement proposals associated with NF that affect or may affect black bears should be opposed.

229 - In conjunction with other appropriate state and federal agencies, the Forest Service should explore ways to reduce or eliminate highway mortality.

Response: Road projects such as State Highway 40 are outside the scope of the Forest Plan.

230 - We would like to see the Forest Service take a more proactive approach in reducing mortality and facilitating movement of black bear. A first step could be encouraging the FL DOT to post bear crossing signs on existing road mortality hot spots within NFs and by encouraging the construction of wildlife underpasses and bridge expansion on existing road. The Forest Service should take a definitive stance opposing the widening of SR 40 through the Ocala NF.

232 - An opportunity exists for the Apalachicola NF to become a training center for the use of prescribed fire. We strongly encourage the establishment of such a center in Liberty County because it would provide a significant benefit to fire management on a national scale and would benefit local economies by providing jobs and economic activity.

Response: This decision is outside the scope of the Forest Plan.

Miscellaneous Comments

20 - Concerned about clearcutting, the Rainbow people, homeless people that live at Buck Lake and vicinity.

Response: These are issues that concern a great many of our visitors. The standards and guidelines, as well as forest regulations, will guide us in managing the forests in a responsible and compassionate manner.

41 - A ``business as usual" philosophy is proposed for adoption instead of an approach to sound forest management.

Response: The move toward uneven-aged management is anything but ``business as usual." Correctly implemented, uneven-aged management is a sound forest management system. The Forest Plan is not only dramatically different from past plans, but based on sound ecological principles.

41 - An aggressive road building and reconstruction program and increased rates of cutting in the first ten years are planned at a rate that may leave nothing left to manage.

Response: On the contrary, only 7 miles of road were constructed from 1986 to 1994. The last 10 years have been mostly reconstruction of roads as needed for timber sales, recreation access, and the forest transportation system. The harvest rate is a small percent of total growth, and harvest occurs on 12 percent of the forest over 10 years.

117 - Keep in mind that since the forests of our nation are for public use that also means multi-use as well, regardless of what the Green Advocacy Groups say. Balancing that delicate scale is of utmost importance.

Response: Thank you for your comment. See Record of Decision for rationale for the selected alternative.

215 - While the Plan and DEIS propose some improvements over the current management activities, the proposed alternative still emphasizes timber cutting and other forms of human activity such as recreation. Calls on the Forest Service to reverse this emphasis and accord wildlife, fish, and plants the highest possible priority in management.

Response: The Forest Plan attempts to balance timber harvest and recreation use with protection of plant and animal species and habitats. The concept of multiple use does not mean every use must occur on every acre; some activities are in some areas and other activities in other areas. But protection of threatened and endangered species will continue in areas of timber harvest and recreation use.

124 - Policies are different from the past and how different they are. FS seems to be reluctant to admit past mistakes. Why not say too much land was plowed, too much slash pine was planted, RCW management was inadequate, harvests were excessive, and clearcuts were too large?

157 - Why not say too much land was plowed, too much slash pine was planted, RCW management was inadequate, harvests were excessive, and clearcuts were too large?

Response: Times do change, but that does not mean past ways of doing things were wrong. The policies, standards, and goals of previous years were adequate and fitting for the time. The Forest

Plan does not dwell on the past but is a vision for the future. As research, science, and philosophy have developed new approaches to forest management, we attempt to change our management to fit our current mission of managing the land in a sound ecological manner.

203 - Please help to keep our forests truly multiple use.

233 - Multiple use should consist of fishing and hunting and a wide diversity of recreational uses.

Response: We agree. Thank you for your comment.