2003 Annual Monitoring and Evaluation Report
National Forests
In Florida

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2003 ANNUAL MONITORING AND EVALUATION REPORT
National Forests in Florida

Abstract

Monitoring, evaluation, and research are the heart of adaptive management and are the quality control mechanisms for the Revised Land and Resource Management Plan for the National Forests in Florida (Forest Plan). The National Forest Management Act planning regulations specify that "at intervals established in the Forest Plan, implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards have been applied. Based on this evaluation, the interdisciplinary team shall recommend to the Forest Supervisor such changes in management direction, revisions, or amendments to the Forest Plan as are deemed necessary." Monitoring elements covered in this report are listed in Chapter 5 of the Forest Plan. Monitoring Tasks are listed under Appendix E of the Forest Plan.

Certification Statement

I have evaluated the monitoring results and recommendations in this Report. I have directed that the Action Plans developed to respond to these recommendations be implemented, unless new information or changed resource conditions warrant otherwise. I have considered funding requirements in the budget necessary to implement these actions.

With these completed changes, the Forest Plan is sufficient to guide forest management for the next fiscal year, unless ongoing monitoring and evaluation identify further need for change. Any amendments or revisions to the Forest Plan will be made using the appropriate NEPA procedures.

This report is approved:

Marsha Kearney 09/30/2004

MARSHA KEARNEY Date
Forest Supervisor

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Summary

Implementation of The Revised Land and Resource Management Plan for the National Forests in Florida (Forest Plan) began in June 1999. This report documents the results of monitoring how well goals and objectives of the Forest Plan have been met and how closely management standards have been applied in FY 2003 (October 2002-September 2003), the fourth full year of implementation.

Monitoring elements covered in this report are listed in Chapter 5 of the Forest Plan. Specific monitoring questions are identified and directly linked to Forest Plan goals, desired future conditions, objectives, standards, guidelines and specific regulatory requirements. Every goal, objective, standard and guideline cannot be monitored. Relevancy to issues, compliance with legal and agency policy, scientific credibility, administrative feasibility, budget considerations, and impact on work force all influence monitoring priorities.

Major Findings:

Based on the expected annual average of outcomes for the planning period, most of the monitoring items reflect expected outcomes and are progressing at the rate necessary to achieve the desired conditions, goals and objectives of the Plan within the 10-year planning period. There are some areas where monitoring indicates follow-up action is needed.

Longleaf Restoration

1,108 acres have been restored to longleaf pine from off-site slash and sand pine through the end of FY 2003. No slash pine was removed from mixed stands on the Osceola in FY 2003. In order to meet the 10-year objective, efforts should be made to increase the acreage of restoration in future years. More effort should be made to schedule removal of slash pine from mixed stands on the Osceola National Forest.

Thinning Longleaf and Slash Pine Stands

During FY 2003, 264 acres were offered for thinning purposes. A total of 3,916 acres have been offered through the end of FY 2003. In order to meet the Forest Plan objective, areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling. This objective is critical to maintain forest health and facilitate southern pine beetle prevention. Areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling.

Uneven-aged Management

Through the end of FY 2003, 1,801 acres were offered with uneven-aged management harvest methods. 282 acres were offered in FY 2003. In order to meet the objectives of the Forest Plan, areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling.

Irregular Shelterwood Harvest

There were no acres of irregular shelterwood offered for harvest through the end of FY 2003. In order to meet the objectives of the Forest Plan, there should be an effort made to schedule areas for harvest using this method. Areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling. This objective may no longer be applicable as a forest objective and will be considered in detail for amendment in the Forest Plan based on the five-year monitoring findings.

Sand Pine Regeneration

Timber harvest is the primary management tool for maintaining scrub jay habitat on the Ocala National Forest. Clear-cutting of mature sand pine regenerates the scrub habitat necessary for the jay. A regular cycle of sand pine regeneration is being employed to maintain the jays across the scrub on the Ocala National Forest. At the end of FY 2003, there were 51,214 acres of sand pine scrub in the 3-15 year old age class. 7,749 acres of sand pine have been committed to regeneration harvest through the end of FY 2003. 2,456 acres of sand pine were offered for regeneration harvest in FY 2003.

Allowable Sale Quantity Standard

5.01 MMCF was offered for sale in FY 2003: 4.25 MMCF on the Ocala, 0.44 MMCF on the Osceola, and 0.32 MMCF on the Apalachicola. The four-year total of timber offered for sale through FY's 2000-2003 is 20.23 MMCF, which is 20% of the maximum allowed.

The standard in the Forest Plan related to timber production places a limit of selling no more than 103 MMCF of timber in the ten-year planning period. The total volumes offered for sale and actually sold are within this standard.

Access Designation Process

The Access Designation Process is designed to proactively address the growing demand and subsequent resource damage of bicycles, off-highway vehicles, all-terrain vehicles and other motorized access on the forests. Although a decision was made in FY2002 to combine all three forests analysis into one Environmental Impact Statement (EIS), this created a large document and made tracking site-specific details difficult. A decision was made in FY2003 to separate the analysis by forest, with the Osceola NF to complete an Environmental Assessment (EA) and the Ocala and Apalachicola NFs to complete Environmental Impact Statements (EIS) due to their heavier use and amount of unclassified roads. New forest-level interdisciplinary teams were identified for each district so that the districts could take the lead on providing site-specific analysis and the staff in the Supervisors Office could compile the findings.

Because of these delays, the 2-year time frame expired and the designation process was not complete. Since the Forest Plan did not provide guidance for this situation, it was decided to amend the Forest Plan and remove the reference to the two-year time frame and continue as fast as possible with the designation process.

Completion of this process is now anticipated to be in spring 2005.

Prescribed Burning

Based on the upland pine Management Area 7.1 acres of 507,740, 86% of this type was burned in the last 3 years (2001,2002,2003). However, in FY 2003, 190,090 acres were burned; 36 percent of these acres were burned in the winter months, 47 percent of these acres were burned between March 15 and September 30, and 52,998 acres were burned between May 1 and July 31.

A total of 222 miles of re-worked firelines were installed during FY2003. Four miles of new firelines were plowed for prescribed fire. Wildfire generated 8 miles of firelines.

Wilderness and Wild and Scenic Rivers

Recommendations for the four rivers studied in the Revised Forest Plan, as well as the recommendation for Clear Lake Wilderness Study Area to be designated as wilderness, were not carried forward in FY2003. Legislative EISs for wilderness designation or wild and scenic river designation are not carried forward without support from the state's congressional delegation and a

commitment to introduce a bill into Congress. Florida's congressional delegation should be contacted for support of a wilderness bill in Florida. It is possible that both wilderness and wild and scenic river recommendations could be accomplished in one piece of legislation.

Management Indicator Species

The 2001 Monitoring Report indicated that there was a need to re-evaluate the management indicator species (MIS) selected to indicate effects of management activities. Some MIS are difficult to monitor and may have limited utility to indicate effects of management activities. With limited funds and personnel for monitoring, the Forest needs to be able to tie major management activities to species that can be efficiently monitored with a cause and effect relationship to those management activities. On 12 and 13 February 2003, biological staff from the 3 Forests and from the Supervisor's office met at Live Oak, FL with the primary purpose of review and revision of the MIS list for the national Forests in Florida. The two-day meeting resulted in recommended modifications of the MIS list that will be presented to the Forest Leadership Team at an upcoming meeting. We reduced the Forest's MIS list from 26 to 13 species using a "Decision Tree" system. Due to other, higher priorities throughout the year, we have still not had the opportunity to do the necessary work to prepare a Forest Plan Amendment reducing our MIS list. We will continue to report on all 26 species.

It will be noted throughout the following discussion that the data in some tables is presented through 2003, while some other data is presented through 2002, and in a few cases, 2001 or earlier. In addition to the information collected by Forest Service personnel, our monitoring data is obtained from a variety of reliable sources, including (but not necessarily limited to) the Florida Fish and Wildlife Conservation Commission (FWC), the Florida Natural Areas Inventory (FNAI), and the US Fish and Wildlife Service (USFWS). Because of the way or the time that these various datasets were collected and compiled, the source may consider them "2002 data" or "2003 data", even if they were collected about the same time. In every case, we have used the most current relevant information for each species considered in this monitoring report.

Demands of the Public and Emerging Issues

The four emerging issues identified by the Chief of the Forest Service as the major threats to national forests today continue to be top priorities for management. These include: fire and forest health; invasive species; unmanaged recreation and fragmentation. Elements of the Revised Forest Plan address these issues, from identifying an access system of recreational trails to emphasizing prescribed burning as a primary tool for ecosystem management.

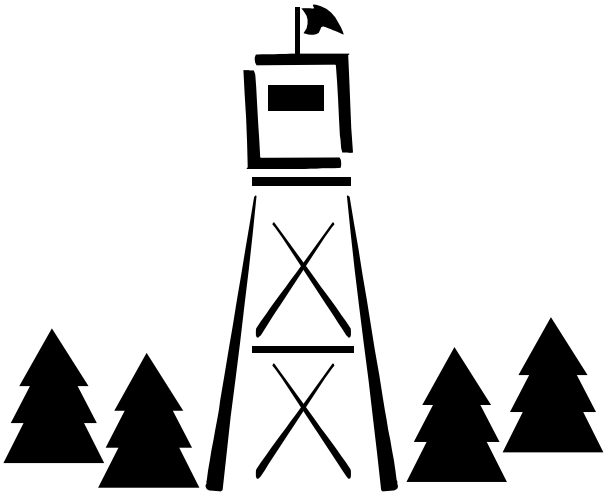
Use of fire in the longleaf pine wiregrass ecosystem continues to be integral to the restoration of these systems and to recovery of the red-cockaed woodpecker. Both winter and growing season burns are being used in these recovery efforts. Internal and external dialog continues on the application and use of fire for these objectives.

I. Introduction

Monitoring is the quality control mechanism for the Forest Plan. Monitoring elements covered in this report are listed in Chapter 5 of the Forest Plan.

The report contains results and findings structured under three major headings: Ecosystem Condition, Health, and Sustainability; Sustainable Multiple Forest and Range Benefits; and Organizational Effectiveness. Under each of these headings, Forest Plan goals, objectives, or standards and guidelines that apply are listed along with the monitoring questions, items to measure and results.

This report also presents a Monitoring and Evaluation Action Plan that outlines actions to be taken in response to the results of monitoring. No single monitoring item or parameter automatically triggers a change in Forest Plan direction. An interdisciplinary, holistic approach is used to evaluate information and decide what changes are needed.



II. Detailed Monitoring and Evaluation Results and Findings

Ecosystem Condition, Health, and Sustainability

Forest Plan Goals:

- Maintain or, where necessary, restore ecosystem composition, structure, and function within the natural range of variability in all ecosystems, with emphasis on longleaf pine-wiregrass, sand pine-oak scrub, pine flatwoods, hardwood/cypress, oak hammock ecosystems, and other imperiled specialized communities.
- Manage floodplains, groundwater, lakes, riparian areas, springs, streams, and wetlands to protect or enhance their individual values and ecological functions.
- Conserve and protect important elements of diversity such as endangered and threatened species habitat, declining natural communities, and uncommon biological, ecological, or geological sites.
- Manage for habitat conditions to recover and sustain viable populations of all native species, with special emphasis on rare species.

1.1 Monitoring Question: Is the health of natural forest communities being maintained or improved?

Item to Measure: Management Indicators (Refer to Tables 5.2 and 5.3 in the Forest Plan)

Plants

Results: The monitoring strategy in the Forest Plan prescribes that this item be reported on a five-year frequency in order to discern significant trends in the indicators and management activities. The following results are presented as a baseline of current information concerning these management indicator species. Because of limited funding, variables for community indicators were not collected for all species in FY 2003. Information on Threatened and Endangered plants and animals which are also MIS species are reported in this section of the monitoring report..

In 1994, as part of an ecosystem classification project, the National Forests in Florida entered into a contract with the University of Florida, to establish plots on the five districts on the National Forests in Florida. Data was to be taken from these plots on soils and vegetation. The plots were also to serve as permanent vegetation monitoring plots. Beginning in November of 1994, ninety plots were established on the Ocala National Forest, fifty on the Osceola National Forest, and one hundred one on the Apalachicola National Forest.

In 1999 and 2000, those plots with recorded occurrences of MIS plants on the Ocala National Forest were identified and most were relocated. The area coverage of MIS plants in these plots was recorded a second time.

In 1996, plots were established to specifically monitor population trends of the Threatened and Endangered plants on the Ocala and Apalachicola National Forests. Initial data has been taken from most of these plots and several have been revisited.

The plots established by the University of Florida were intentionally placed on sites selected because they were thought to closely represent the potential natural vegetation of their respective communities. In order to track the success of efforts to improve or restore the natural native communities on degraded sites, plans are to establish similar monitoring plots on pine plantations and other degraded sites. Because of shortages of personnel with the expertise to accomplish this, the National Forests in Florida have an agreement with Florida Natural Areas Inventory (Florida's Heritage Organization) to establish such plots and to perform additional surveys for MIS, T & E, and Forest Sensitive Plants. Results of those MIS species occurring in the plots are shown under the discussion of each of those species (Figures 1-9).

Florida Bonamia (Bonamia grandiflora**)**

Results: A survey completed by the US Forest Service in 1994 found Florida Bonamia to occur in 93 stands on the Ocala National Forest. Populations of Florida Bonamia in the Ocala National Forest 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.

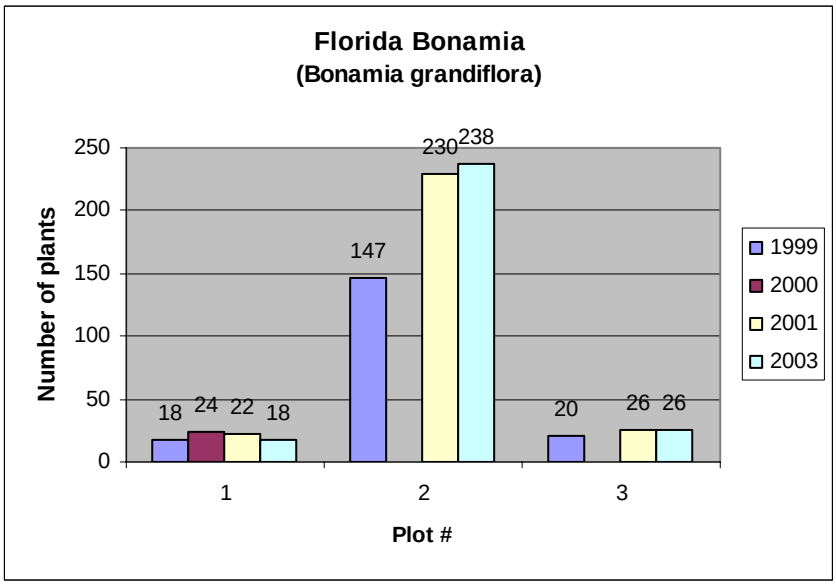


Figure 1. Ecosystem Plot Data for Florida Bonamia
Number of plants/plot

Evaluation: Current and planned management practices ensure an abundance of the plant's early successional habitat. On the National Forest, the greatest threat is fire exclusion or lack of some other type of disturbance to remove the overstory and midstory of the scrub habitat at intervals short enough to prevent loss of this component between disturbances. The Forest Service frequently burns the longleaf pine/wiregrass sandhill community. Where Florida Bonamia occurs in this community, it appears to respond well to these frequent, low intensity fires.

Scrub Buckwheat (Eriogonum longifolium var. gnaphifolium)

Results: FNAI shows 92 records of occurrence in eight counties from Putnam County south to Highlands County. The US Forest Service completed a survey on the Ocala in 1994, finding scrub buckwheat in 54 stands.

Evaluation: On the National Forest, the greatest threat is fire exclusion or lack of some other type of disturbance to remove the overstory and midstory of the scrub habitat at intervals short enough to prevent loss of this component between disturbances. Little data is available on the effects of mechanical disturbance on Eriogonum longifolium, but would likely be considered a threat to the species.

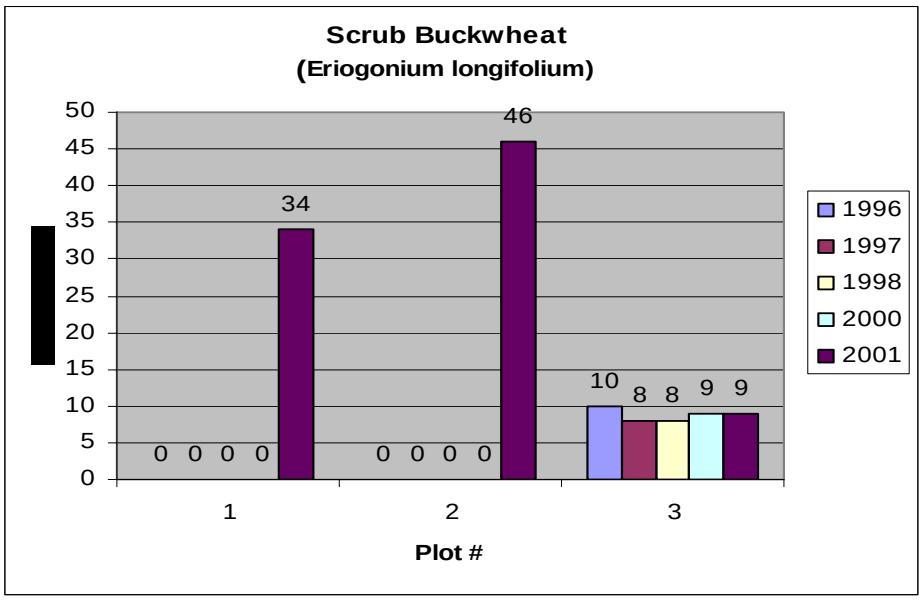


Figure 2. Ecosystem Plot data for Scrub Buckwheat
Number of plants/plot

Harper's Beauty (Harperocallis flava)

Results: There are ten records of occurrence in Liberty and Franklin Counties, all of which are within the boundaries of the Apalachicola Ranger District. Harpers beauty was recently discovered in Bay County on private property. The majority of the population was originally thought to be on or adjacent to the right of way of State Road 65, which runs north and south through the Apalachicola National Forest. Since 1992, the US Forest Service has conducted numerous surveys following fire. These surveys have revealed numerous populations growing in natural habitat. No plots were revisited in FY 2003 because these plants are primarily visible only following fire.

Evaluation: The aggressive prescribed burning program by the Apalachicola National Forest has been effective in improving and maintaining habitat. The State Road 65 right-of-way belongs to the National Forest, and is under special use permit to the State of Florida. This gives the Forest Service considerable control over maintenance and other activities taking place on the right-of-way, making it possible to protect the roadside plants. The Forest Service only allows mowing late in the growing season after the roadside Harper's Beauty has been inspected and the seeds found to be mature. Most other construction and maintenance activities are restricted to within 6 feet of the pavement.

This is not the case with the Apalachicola Northern Railroad, which runs north and south through the Apalachicola Ranger District, paralleling State Road 65 to the east. The railroad company owns that right-of-way which also supports a small component of Harper's Beauty.

There is a potential threat to the roadside plants on State Road 65 from inadvertent use of herbicides on the right-of-way and from unauthorized construction work on the right–of-way. Those plants along

the railroad right-of-way are not protected and could be eliminated by herbicide use and other maintenance or construction activities by the owner.

The Forest Plan has an objective that calls for prescribed burning on average every three years. Standard VG-4 calls for locating and perpetuating seepage bogs and savannahs and Standard VG-18 was designed to limit mechanical site preparation and other soil disturbing activities in wiregrass communities. These standards should provide considerable protection for Harper's Beauty and if the goal of prescribed burning on a three-year average is aggressively pursued, sufficient suitable habitat should be maintained on the Apalachicola National Forest. The greatest threats are inability to meet, or approach, the objective of burning on an average three-year rotation and the use of mechanized equipment in the suppression of fires.

In 1999 three plots were established to monitor Harperocallis flava. Plots two and three have been sampled three times. Plot one was established in an area where *H. flava* was thought to occur, however, it was not during the flowering season and there appears to be none in the plot. Plans are to establish a new plot.

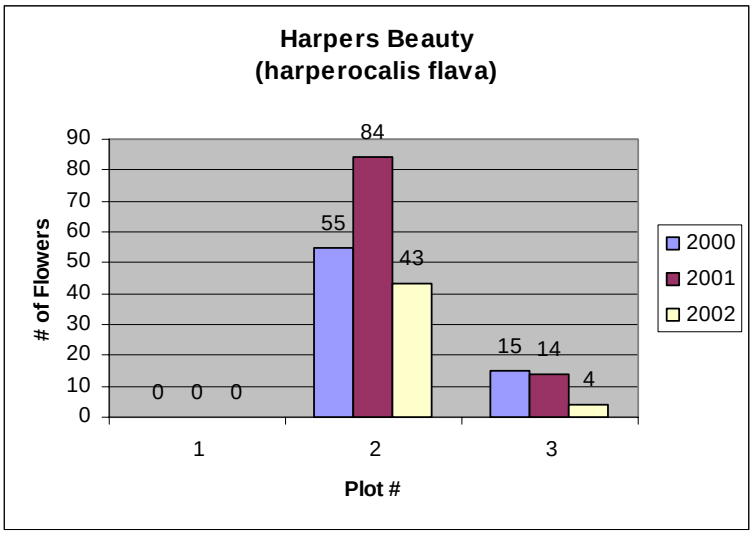


Figure 3. Ecosystem Plot data for Harper's Beauty Number of flowers/plot

White Birds-in-a-Nest *(Macbridea alba)*

Results: There are 66-recorded occurrences from four central Florida panhandle counties. The Apalachicola Ranger District occupies a considerable part of two of these counties, Franklin and Liberty. In the last ten years, the forest service has performed a number of surveys, mostly following burns.

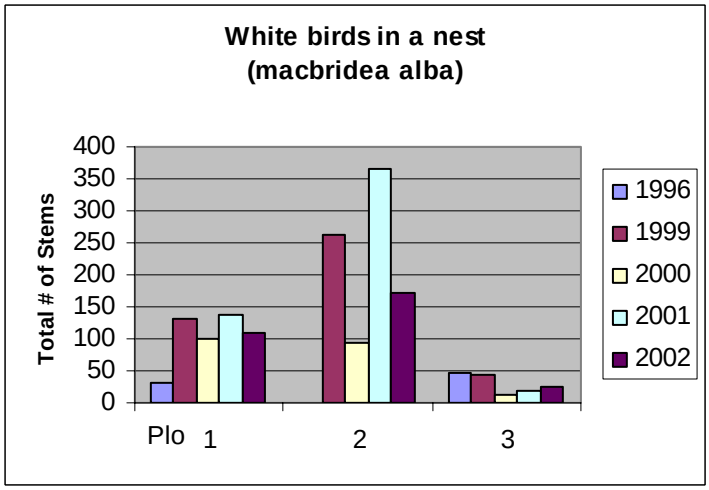


Figure 4.Ecosystem Plot Data for White-birds-in-a-Nest Number of stems/plot

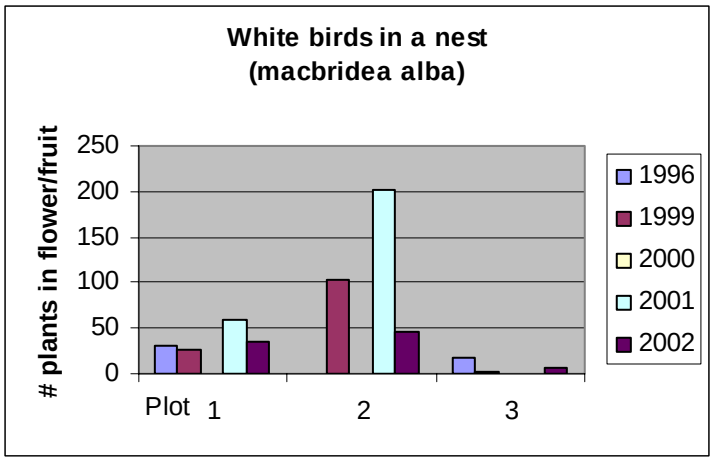


Figure 5. Ecosystem Plot Data for White-birds-in-a-Nest Number of plants flowering/fruiting per plot

Evaluation: The greatest threats to Macbridea are mechanical disturbance, most often associated with site preparation and fire suppression. In the last ten years, the Apalachicola National Forest has stopped most clearcutting and more importantly has largely curtailed intensive mechanical site preparation, sparing habitat degradation. The aggressive burning program on the Apalachicola can be credited with restoring and maintaining suitable habitat.

VG-18 of the Forest Plan provides considerable protection for Macbridea and its habitat. The objective to prescribe burn on average of every three years should encourage, if not require maintenance of high quality habitat. The greatest threats are inability to meet, or approach, the objective of burning on an average three-year rotation and the use of mechanized equipment in the suppression of fires.

Godfrey's Butterwort *(Pinguicula ionantha)*

Results: There are 62-recorded occurrences from five central Florida panhandle counties. The Apalachicola Ranger District occupies a considerable part of the land area of two of these counties, Liberty and Franklin. In the last ten years the Forest Service has performed a number of field surveys

for Godfrey's Butterwort. These surveys have provided the Forest Service with better knowledge of the distribution on the National Forest.

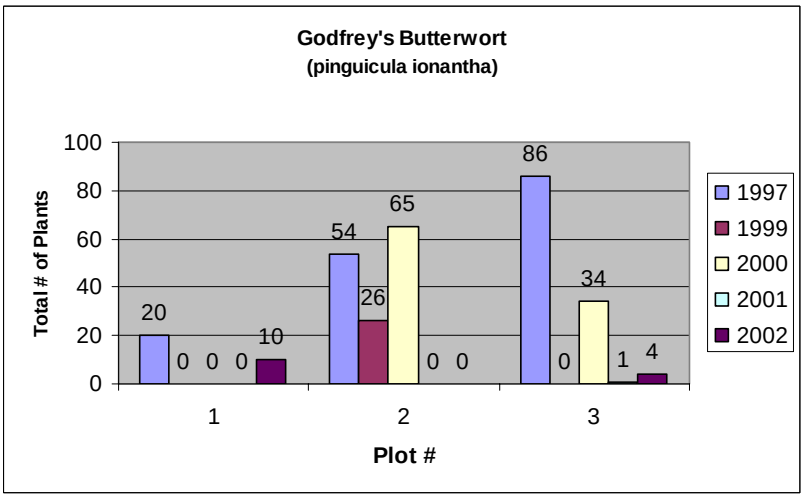


Figure 6. Ecosystem Plot Data for Godfrey's Butterwort Number of plants/plot

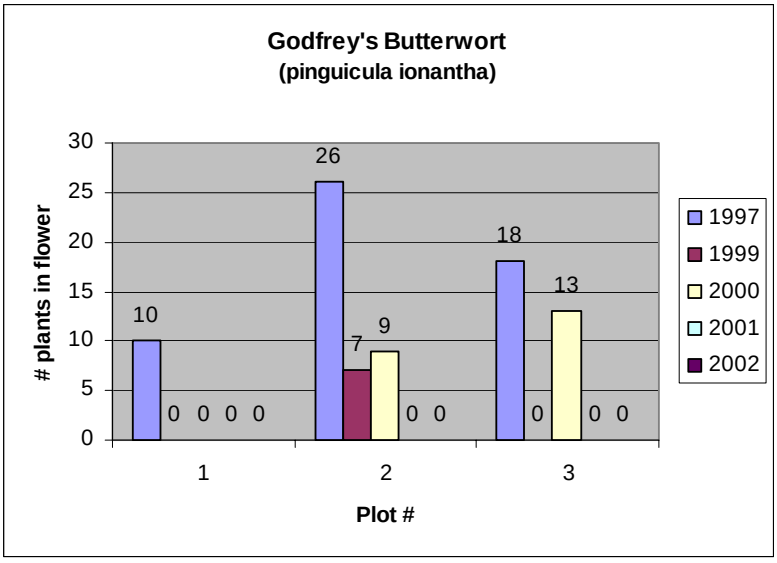


Figure 7. Ecosystem Plot Data for Godfrey's Butterwort Number of flowers/plot

<u>Evaluation:</u> The greatest threat to Godfrey's Butterwort is habitat loss, due primarily to ditching and draining habitat for conversion to pine plantations and fire suppression. Ditching and bedding eliminates not only many individual plants, it permanently alters the hydrology. Few survivors can compete in the densely planted pines and encroachment by woody shrubs resulting from fire suppression. In the last ten years such activities have been significantly curtailed on the Apalachicola National Forest.

VG-18 of the Revised Plan provides some protection for Godfrey's Butterwort and the objective to prescribe burn on average of three years should help to maintain suitable habitat if burning is done under conditions that fire will frequently reach such habitat.

Forestwide Goal 6 would maintain or restore the natural range of viability of all ecosystems and Standard VG-4 calls for locating and perpetuating seepage bogs and savannahs. If accomplished, this direction should help provide suitable habitat for Godfrey's Butterwort. The greatest threats are inability to meet, or approach, the objective of burning on an average three-year rotation and the use of mechanized equipment in the suppression of fires.

Small lewtons milkwort *(Polygala lewtonii)*

Results: There are 36 occurrence records from six central Florida counties, beginning in Marion County south to Highlands County. A 1993 survey by the US Forest Service found the species in ten stands on the Ocala National Forest.

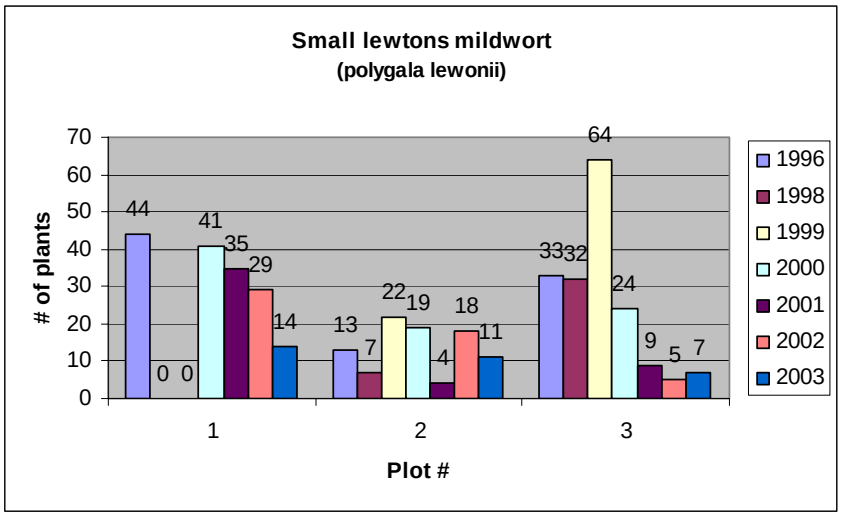


Figure 8. Ecosystem Plot Data for Lewton's Polygala Number of plants/plot

Evaluation: The greatest threat is fire exclusion or lack of some other type of disturbance to remove the overstory and midstory of the scrub habitat at intervals short enough to prevent loss of this component between disturbances.

Florida Skullcap *(Scutellaria floridana)*

Results: There are 23-recorded occurrences in three central panhandle Florida counties. The Apalachicola Ranger District occupies a considerable amount of the land area of two of these counties, Liberty and Franklin. In the last ten years, the Forest Service has conducted field surveys to establish the distribution of the species on the National Forest. These surveys, following fire, have resulted in the collection of considerable information on the distribution of the species on the forest. No plot data was collected in 2003 because this species is best assessed following fire.

Evaluation: The greatest threats to Florida Skullcap are mechanical disturbance and fire suppression. In the last ten years the Apalachicola National Forest has stopped most clear cutting and more importantly has largely curtailed intensive mechanical site preparation, sparing habitat degradation.

The aggressive burning program on the Apalachicola can be credited with restoring and maintaining suitable habitat.

VG-18 of the Forest Plan provides considerable protection for Florida Skullcap and its habitat. The objective to prescribe burn on average of every three years should encourage if not require maintenance of high quality habitat. Forestwide Goal 6 would maintain or restore the natural range of viability of all ecosystems and Standard VG-4 calls for locating and perpetuating seepage bogs and savannahs. If accomplished, this direction should help provide suitable habitat for Florida Skullcap. The greatest threats are inability to meet, or approach, the objective of burning on an average three-year rotation and the use of mechanized equipment in the suppression of fires.

Wiregrass *(Aristida beyrichiana)*

Results: Wiregrass is distributed over all three of the National Forests in Florida and is a dominant or co-dominant of a number of communities. Many of the wiregrass-dominated communities on the National Forests in Florida are in relatively good ecological condition. This indicates they have not been significantly impacted by mechanical disturbance and fire has entered frequently enough to prevent significant encroachment by woody plants. However, a significant amount of the wiregrass communities have been converted to pine plantations, or mechanically disturbed in other ways. In other cases, the fire return interval has been so reduced that woody shrubs, hardwood trees, and species of pine not native to these communities such as slash pine or sand pine have been allowed to encroach.

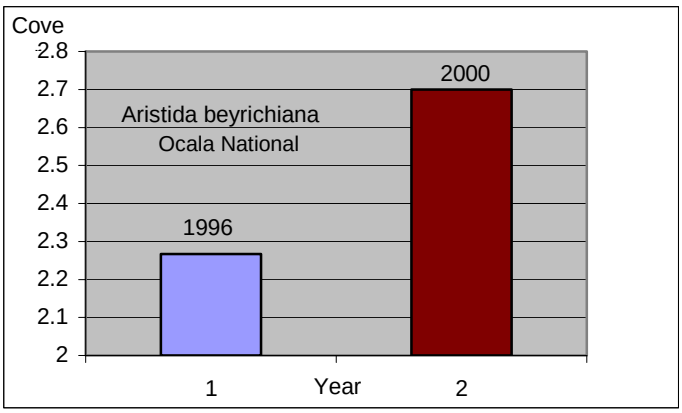


Figure 9. Ecosystem Plot Data for Wiregrass
Percent (%) area coverage in plots

Evaluation: The greatest threat to wiregrass is inability to meet, or approach, the objective of burning on an average three-year rotation. Other significant threats include the use of mechanized equipment in the suppression of fires and the use of vehicles off established roads and trails.

Toothache Grass *(Ctenium aromaticum)*

Results: Toothache Grass, much like wiregrass, is a long-lived perennial bunchgrass that is sensitive to mechanical disturbance and heavily dependent on fire. It is found in mesic to poorly drained flatwoods, wet savannahs, and ecotones between pinelands and wetlands. Like wiregrass, it is not considered to be imperiled, but is an important indicator of the ecological health of the communities of which it is a component. Such communities are known to support many rare plant and animal species and healthy examples are becoming especially rare. The range of Toothache Grass includes all five districts of the National Forests in Florida, making it a useful management indicator on all districts.

Evaluation: The greatest threats are inability to meet, or approach, the objective of burning on an average three-year rotation. Other significant threats include the use of mechanized equipment in the suppression of fires and the use of vehicles off established roads and trails.

Sand Live Oak (*Quercus geminata)*

Results: Sand Live Oak was selected as an indicator of the oak dome communities that occur as inclusions within the longleaf pine islands on the Ocala National Forest. The communities referred to as longleaf pine islands are longleaf pine/turkey oak/wiregrass sandhill communities that occur within the scrub communities on the Ocala National Forest. There was concern that efforts to maintain and in some cases restore these longleaf pine islands would overlook the oak domes, which were historically and continue to be important inclusions.

Evaluation: While sand live oak occurs on all five districts of the National Forests in Florida and in other communities as well as the oak domes, it is regarded as a management indicator only on the two districts of the Ocala National Forest. It may, however, encroach into the longleaf pine/wiregrass communities if the fire return interval is to long. In this case, excessive encroachment by Sand Live Oak would indicate ecological degradation.

Curtiss Dropseed *(Sporobolus curtissii)*

Results: Curtiss Dropseed is a component of the mesic to poorly drained longleaf pine flatwoods. It has been observed on four of the five districts of the National Forests in Florida. Curtiss Dropseed is usually a co-dominant species in the groundcover, with such species as wiregrass and saw palmetto (*Serenoa repens*). It is a long-lived perennial bunch grass that depends heavily on fire and is sensitive to mechanical disturbance. It is distributed widely enough to be of value as a management indicator on a considerable portion of the National Forests in Florida. Curtiss Dropseed is ranked G3 by the Nature Conservancy and is proposed for inclusion on the next revision of the Region 8 Sensitive Species List.

Evaluation: The greatest threats are inability to meet, or approach, the objective of burning on an average three-year rotation. Other significant threats include the use of mechanized equipment in the suppression of fires and the use of vehicles off established roads and trails.

Florida Dropseed *(Sporobolus floridanus)*

Results: Florida Dropseed is a component of the mesic to poorly drained longleaf pine flatwoods communities, flatwoods depressions, wet savannahs, and ecotones between pine flatwoods and wetlands. It is known to occur on both districts of the Apalachicola National Forest and on the Osceola Ranger District. It may potentially occur on the Ocala National Forest, but there are no known records of occurrence. It is a long-lived perennial bunch grass, heavily dependent on fire and sensitive to mechanical disturbance.

Evaluation: The greatest threats are inability to meet, or approach, the objective of burning on an average three-year rotation. Other significant threats include the use of mechanized equipment in the suppression of fires and the use of vehicles off established roads and trails.

Pineywoods Dropseed *(Sporobolus junceus)*

Results: Pineywoods Dropseed is known from both districts of the Apalachicola National Forest and both districts of the Ocala National Forest. There is some potential of occurrence on the better drained areas of the Osceola National Forest, but there are no records of occurrence on that forest.

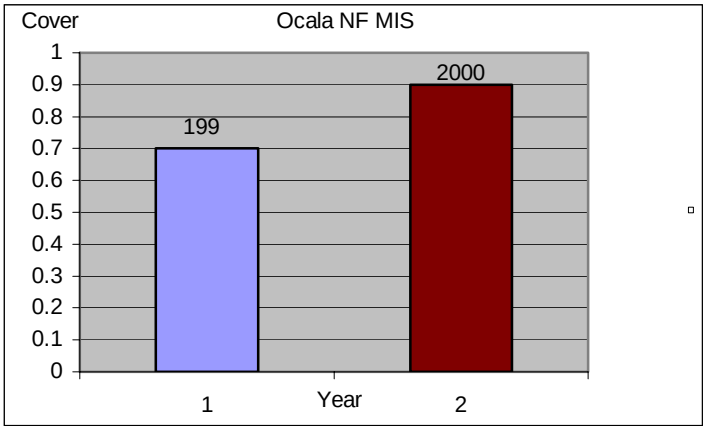


Figure 10. Ecosystem Plot Data for Pineywoods Dropseed Percent (%) area coverage in plots

Pineywoods Dropseed is not considered imperiled, but the sandhill community that supports it is ranked G2G3. The species distribution is broad enough on the forest for it to serve as a management indicator on the sandhill communities over much of the National Forests in Florida.

Evaluation: The greatest threats are inability to meet, or approach, the objective of burning on an average three-year rotation. Other significant threats include the use of mechanized equipment in the suppression of fires and the use of vehicles off established roads and trails.

Xyris stricta

Results: *Xyris stricta*, an obligate wetland species, is a component of the groundcover of the cypress (*Taxodium ascendens*) domes and strands. It is known from both districts of the Apalachicola National Forest and from the Osceola National Forest.

The structures of the communities in which *Xyris stricta* occurs, are dependent on relatively frequent fire to maintain a graminoid-dominated groundcover with little midstory development. *Xyris stricta* is thought to serve as a good indicator of the ecological health of these fire dependent wetlands.

Evaluation: According to the Forest Plan, cypress dominated wetland communities are not suitable for timber harvest. For this reason, there should be few impacts by forest service projects to these communities. The greatest threat is the lack of allowing fire to enter on a frequency enough to maintain community structure and composition. Another threat is the use of mechanized equipment in the suppression of fire.

Wildlife and Fish

Southern Bald Eagle (*Haliaeetus l. leucocephalus*)

Results: Bald eagles currently nest along the St. John's River, and serve as an indicator of bottomland forest, floodplain swamp, and lake/pond habitat. Table 1 shows twelve years of monitoring results for bald eagle pairs on the National Forests in Florida.

Table 1.
Number of Bald Eagle Pairs
National Forests in Florida

Year	Apalachicola. NF	Osceola NF	Ocala NF
1992	1	0	20
1993	0	0	31
1994	0	0	37
1995	0	0	40
1996	0	0	32
1997	2	0	23
1998	2	0	54
1999	0	0	47
2000	0	0	48
2001	1	0	54
2002	1	0	49
2003	2	0	55

In 1999 and 2000, the Ocala National Forest produced 55 and 60 downy young, respectively. Of these, 54 fledglings were successfully produced each year with survival rates of 98% and 90% respectively. In 2002, the Apalachicola fledged one and the Ocala eagle population fledged 46 eaglets. In 2003, the Apalachicola fledged 4 young and the Ocala fledged 61. Chicks documented to survive to 8 to 11 weeks are assumed fledged, based on 93% (41 of 44) survival rate of 7-8 week-old chicks documented in: *Wood, P. W. and M. W. Collopy. 1995. Population ecology of subadult southern bald eagles in Florida: post-fledging ecology, migration patterns, habitat use and survival. Florida Game and Fresh Water Fish Commission Nongame Project NG87-026. Tallahassee, FL. 111pp.* The bald eagle population on the Ocala National Forest has been stable to increasing for the past 10 years, and the Apalachicola population is beginning to increase.

Table 2.
Active Nests/Fledglings
National Forests in Florida

Year	Apalachicola NF	Osceola NF	Lake George RD	Seminole RD
1992	0/0	0/0	19/22	1/1
1993	0/0	0/0	28/19	3/3
1994	0/0	0/0	35/38	2/5
1995	0/0	0/0	36/32	4/3
1996	0/0	0/0	30/32	2/1
1997	0/0	0/0	22/18	1/2
1998	0/0	0/0	47/41	7/3
1999	0/0	0/0	44/52	3/2
2000	0/0	0/0	43/49	5/5
2001	1/1	0/0	47/50	7/7
2002	1/2	0/0	44/47	7/8
2003	2/4	0/0	69/58	5/3

Evaluation: The desired outcome is a stable to increasing number of fledglings produced each year. Currently, the trend appears to be stable to slightly increasing. Fledglings averaged 23/year in 1991-93, averaged 37/year in 1994-96, declined to 20 in 1997, increased from 44 to 58 between 1998-2001, and increased again in both 2002 (57 fledglings) and 2003 (65 fledglings).

Based on the reliable nesting and reproduction of eagles on the Ocala National Forest, and the protection of hardwoods and cypress stands provided by forest-wide standard VG-8, viable populations of the eagle are expected to persist into the future.

Northern Bobwhite (*Colinus virginianus)*

Results: The bobwhite quail serves as an indicator species for sandhill and flatwoods communities on the National Forests in Florida. Call count routes in cooperation with the Florida Fish and Wildlife Conservation Commission and other monitoring methods are being used to develop information about trends for this species.

Because the FWC felt that the data was of marginal value, quail call count routes are no longer conducted universally on the National Forests in Florida. Call Count data was collected only on the Osceola in 2002 and 2003. Quail will continue to be censused, along with all other bird species, on Breeding Bird Survey (BBS) routes and at the R8 Bird Point Count locations on all three National Forests. Each BBS route is 25 miles long; typically along a minor paved road or a natural-surface forest road. Each route consists of 50 "stops", or sampling points ½ mile apart. One useful aspect of the BBS data is that it provides casual (or expert) birders a relative index of how likely it is they will see a particular species of bird along a typical forest roadside, since that's where these data are collected. The National Forests in Florida are participating, along with other National Forests in the southeastern region, in a land bird conservation, monitoring, and inventory strategy nicknamed "R8 Bird". The R8Bird (off-road) point counts began on the Ocala districts in 1997, on the Wakulla District in 2001, and on the Osceola in 2002. Each point samples approximately 2 acres of habitat and points are at least 1/2 mile apart. Point locations were established based on the protocol outlined in *"The Southern National Forest's Migratory and Resident Landbird Conservation Strategy" (USDA Forest Service, R-8, Fisheries, Wildlife, and Range Unit, June, 1996).* Quail counts from all methods are generally very low but appear to be fundamentally stable on all forests (Table 3). The low densities appear to be in accord with the distribution maps for the area published by the BBS.

Table 3. National Forests in Florida Bobwhite Quail Counts
Birds per Station

Year	Apalachicola RD: Call routes, R8Bbird,BBS	Wakulla RD: Call routes, R8Bird, BBS	Osceola RD: Call routes, R8 Bird, BBS	Lake George RD: Call routes, Riverside (R8Bird) Ocala BBS	Seminole RD: Church Lake, Tomahawk, Paisley (R8Bird)
1992	0.28, 0.08	0.54	No data, 0.02	0.2, 0.14	0.6, 2.4
1993	0.19, no data	0.19	0.24, 0	0.6, 0.1	0.9, <0.1
1994	0.18, no data	0.75	0.15, 0.10	<0.1, 0.1	0.7, 0.5
1995	0.23, 0.04	1.01	1.03, 0.08	0.9, 0.18	0.2, 0.3
1996	0.22, 0.12	0.21	0.46, no data	0.1, 0.14	1.0, 0.5
1997	0.33, 0.04	0.26	0.71, 0.08	0.1, 0.12, 0.25	0.8, 0.1, 0.8
1998	No data, 0.12	No data	0.98, 0.08	0.2, 0.06, 0.05	0.3, 0.5, 0.28
1999	No data, 0.22	No data	0.41, 0.18	0.5, 0.04, 0.13	0.9, 0.3, 0.08
2000	No data, 0.04	No data	0.08, no data	0.1, 0.14, 0.1	1.2, 1.1, 0.58
2001	No data, 0.01	No data, 0.97, 0.1	0.02, no data	No data, 0.38, 0.15	0.5, 0.9, 0.25
2002	No data, 0.08	No data, 0.1,0.1	0.0, 0.1,0.12	No data, 0.06, 0.05	0.45
2003	ND,0.47,0.06	ND,0.13,0.2	0.08,0.2,0.09	ND,0.0,0.11	0.0

Evaluation: The desired outcome is 7 or more coveys (groups of 6 – 20 birds) per 100 acres of suitable habitat with stable to increasing trend. This target was set in: *Hunter, C. et al. 2001. Partners in Flight Bird Conservation Plan for the South Atlantic Coastal Plain. American Bird Conservancy. 166pp.* Assuming 2 acres per point, the counts range from 0 to 120 birds per 100 acres for all data collected from 1991-2003 (Table 3). Although it is not possible to directly extrapolate from

numbers of individual birds seen or heard to numbers of coveys, it is safe to assume that in some areas, the Forests have good quail populations, and in others the population is low to non-existent. Low quail densities on the National Forests are a reflection of low densities statewide. Our data sources do not reflect consistent trends on the forests. BBS maps show a slight downward trend in those portions of the State that encompass the forest, but forest specific data does not appear to reflect any trends with any real certainty. Additional years of data collection at the R8 Bird sample points will give an improved idea of population trend in the future.

Pileated woodpecker (*Dryocopus pileatus)*, PIWO

Results: This species is sampled using the BBS routes and the R8 Land bird survey. The pileated is found in all seasons in Florida with primary habitats being mature and extensive forests. It occurs in both deep woods and swamps as well as in rather open and upland forests. It seems most numerous in river-bottom hardwoods. Consequently, this species was chosen as an MIS in the Forest Plan for swamp communities including bottomland forest and strand and dome swamps. On the Ocala, the species occurs in the longleaf pine and sand pine scrub communities.

Table 4.
National Forests in Florida BBS Routes
Pileated Woodpeckers Counted per Station

Year	Apalachicola	Osceola	Ocala
1992	0.08	0.14	0.04
1993	No data	0.14	0.04
1994	No data	0.14	0.04
1995	0.18	0.08	0.02
1996	0.08	No data	0
1997	0.32	0.12	0.06
1998	0.12	0.12	0
1999	0.12	0.12	0.02
2000	0.14	0.10	0.04
2001	0.22	No data	0.02
2002	0.13	0.11	0.04
2003	0.10	0.15	0.03

Additional pileated woodpecker monitoring has been developed from points established as part of the R8 Landbird Monitoring strategy (Table 5). From 1997 through 2001, 40 points each on the Ocala Districts (Lake George and Seminole) were monitored. In 2001, 30 points on the Wakulla District were added. In 2002, 30 points were added on the Apalachicola Ranger District and 30 were added on the Osceola NF, for a total of 170 points on the National Forests in Florida.

Table 5.
Pileated Woodpecker
R8 Landbird Monitoring - Birds per Point

Year	Apalachicola NF	Lake George RD	Seminole RD	Osceola NF
1997	No data	0.28	0.05	No data
1998	No data	0.18	0.28	No data
1999	No data	0.18	0.25	No data
2000	0.06	0.10	0.13	No data
2001	0.13	0.40	0.23	No data
2002	0.13	0.13	0.10	0.17
2003	0.2	0.17	0	0.03

Evaluation: The desired outcome is a stable to increasing trend. BBS trend data for the state indicate that this species has been stable to slightly increasing in Florida since1966. Considered as a separate group, the National Forest BBS routes show a slightly declining trend. Data from the R8 Bird routes is still too limited to make any population trend inferences. Forest plan standards and guides (VG-8, VG10, VG-11, VG-12) exclude hardwood stands from management for timber production and will retain large pine trees across the landscape that will eventually become the large snags necessary for pileated woodpecker nesting habitat. Adherence to these standards is expected to retain viable and increasing populations of this woodpecker across the National Forests in Florida.

Prothonotary Warbler (*Protonotaria citrea)*, **PROW**

Results: Like the pileated woodpecker, this warbler's key habitat requirements include swamps or bottomlands. Standing water and cavities in stumps, stub branches, or dead trees are necessary for nesting. The species is a secondary cavity nester; dependent on other species to excavate the cavities it uses for nesting. Because it is much smaller than the pileated woodpecker discussed above, it can nest in cavities in smaller trees; it will accept trees with a DBH as small as 6 inches *(P. Hamel, The Land Manager's Guide to Birds of the South. The Nature Conservancy, 1992).* This species is a neotropical migrant, wintering south of the United States. It arrives in late March to mid-April and departs in mid-August to mid-September. Detections of this species are variable on the BBS routes for the National Forests in Florida. BBS trend maps show a downward trend in Florida, but trends on the National Forests are unclear.

Table 6.
National Forests in Florida BBS Routes
Prothonotary Warblers Counted per Station

Year	Apalachicola	Osceola	Ocala
1992	0.46	0	No habitat on route
1993	No data	0.08	No habitat on route
1994	No data	0.06	No habitat on route
1995	0.58	0.04	No habitat on route
1996	0.56	No data	No habitat on route
1997	0.40	.04	No habitat on route
1998	0	0	No habitat on route
1999	0.56	0.04	No habitat on route
2000	0.46	0	No habitat on route
2001	0.34	No data	No habitat on route
2002	0.25	0.05	No habitat on route
2003	0.3	0.06	" "

Evaluation: The desired outcome is 15 or more pairs per 100 acres of suitable habitat with stable to increasing trend. This target is from: *Hunter, C. et al. 2001. Partners in Flight Bird Conservation Plan for the South Atlantic Coastal Plain. American Bird Conservancy. 166pp.* Data is highly variable, ranging from 0-29 pairs/100 acres (assuming 2 acres per point for data in Table 6). Continued monitoring with R8 Bird points in addition to the BBS routes should produce a better picture over time, but species viability appears secure in the short term.

Southeastern Kestrel (*Falco sparverius)*, **AMKE**

Results: The kestrel was selected as an MIS to monitor the health of early seral stage sandhill and scrubby flatwoods. Breeding bird survey route and R8 Bird point detections have so far been limited to the Ocala National Forest (Table 7).

Table 7.
Southeastern Kestrels Counted per Point

Year	Ocala BBS	Lake George R8Bird	Seminole R8Bird
1992	0.04		
1993	0.02		
1994	0.04		
1995	0.02		
1996	0		
1997	0	0.08	0.13
1998	0.02	0.03	0.13
1999	0.02	0.03	0.13
2000	0.10	0.10	0.08
2001	0.04	0.10	0
2002	0.04	0	0
2003	0.02	0.03	0.08

Kestrel nest boxes are monitored for occupancy on the Lake George RD (Table 8). In 2002, time constraints prevented monitoring of all nest boxes. Thirty new kestrel nest boxes were installed on the Lake George District in 2002. Forty-seven kestrel boxes were built and installed in 2003, but a lack of staffing prevented monitoring of kestrel occupancy. Previous box checks have shown that 69% of the boxes were occupied by cavity nesting birds: 33% kestrel, 31% screech owl, and 5% great-crested flycatcher.

Table 8.
Kestrel Nest Box Checks
Lake George RD

Year	Boxes Checked/ Used by Kestrel
1992	127/23
1993	118/16
1994	201/31
1995	154/36
1996	147/31
1997	0/No data
1998	72/33
1999	6/2
2000	77/30
2001	34/14
2002	1/1
2003	Not Checked

Evaluation: The desired outcome is a stable to increasing trend. While the BBS trend maps show a declining trend in Florida, forest data is still too limited to make a reasoned judgment for the National Forests. Besides being cavity nesters, kestrels are open area hunters, so the emphasis on sand pine regeneration and placement of nest boxes should enable the southeastern kestrel to persist as a viable species on the Ocala National Forest.

Wild Turkey (*Meleagris gallopavo)*, **WITU**

Results: This species is found on the National Forests in Florida during all seasons of the year. It is rare over much of the coastal plain, but common in bottomland habitats. It is also found in a variety of other habitats including upland hardwoods, mixed forests, and pine forests.

The BBS routes on the Apalachicola National Forest have not been recording significant numbers of turkeys. Turkeys are too wary of humans to be counted accurately using a point count method. Track count transects conducted in cooperation with the FWC have, however, detected turkeys at very low densities. Approximately 200 miles of road transects have been surveyed annually since 1993 for tracks on both ranger districts. FWC staff have developed the following track indices. Extrapolation for 2003 was not available at the time of publication.

Table 9.
Wild Turkey Tracks/mile - Apalachicola National Forest

Year	Wakulla RD	Apalachicola RD
1993	0.17	0
1994	0.02	0
1995	0.10	0.30
1996	0.40	0.20
1997	0.30	0.30
1998	0.20	0.30
1999	0.36	0.25
2000	0.60	0.83
2001	0.17	0.17
2002	0.26	0.0
2003	ND	ND

Trends are rather obscure with such low densities, but this species appears to be stable on the Apalachicola National Forest.

The BBS route on the Osceola National Forest has not been recording any significant numbers of wild turkeys. As mentioned for the Apalachicola BBS, point counts are not a good method for sampling turkey populations. Thirty permanent plots for implementation of the R8 landbird monitoring strategy have been installed on the forest, but it is unlikely these samples will yield any good population information for the same reasons the BBS points do not yield good wild turkey population data. There are no track count indices for this area available from the FWC, although they are comfortable enough with the population that spring turkey hunting has been permitted since 1980. Forest Service personnel routinely report incidental sightings of both adult and juvenile birds but there is not yet any consistent data on this species for the Osceola National Forest.

The Ocala National Forest monitors baited stations using the methods of: *Cobb, David. 1990. Survey Techniques for Wild Turkeys in Florida. Florida Game and Fresh Water Fish Commission. Tallahassee, FL. 23pp.*

The Ocala National Forest has also been cooperating with the Florida Fish and Wildlife Conservation Commission in determining trends from track counts of wild turkeys. Commission biologists have determined a notable upward trend in wild turkeys on the forest. This trend is reflected by the Commission's decision in 1997 to institute a limited area spring hunt on the Osceola National Forest for the first time. The Commission opened spring hunting across the entire forest in 2000.

Table 10.
Ocala National Forest - Turkey Monitoring Sites

Year	FFWCC Transects with Tracks	Lake George Bait Stations - % Active, birds seen per station
1991-92	24	
1992-93	23	
1993-94	31	55, 0.4
1994-95	84	38, 0.2
1995-96	59	56, 0.2
1996-97	105	43, 0.4
1997-98	142	74, 1.5
1998-99	132	72, 0.4
1999-00	129	54, 0.6
2000-01	134	44, 0.2
2001-02	108	46, 1.0
2002-03	98	67,3.2

The FFWCC turkey track counts have represented an upward trend in the number of turkeys on the Ocala National Forest, even though the last two years show a downward trend. The Lake George Bait Station data contradicts this information with a considerable increase in activity and birds seen. The permitted hunting trend in Table 11 shows Commission confidence in an increasing population trend sufficient to support sport hunting.

Table 11.
Ocala National Forest - Turkey Permits

Year	Permits Issued/Harvest
1997-98	400/unknown
1998-99	400/unknown
1999-00	400/unknown
2000-01	1460/35
2001-02	1460/36
2002-03	1460/46

Evaluation: The desired outcome is a stable to increasing trend. The wild turkey is present and populations appear to be stable at low densities on both the Apalachicola and Osceola National Forests. Trends are clearly upward on the Ocala National Forest, with population increases such that the Florida Fish and Wildlife Conservation Commission instituted sport hunting on the Ocala National Forest for the first time in 1997. State biologists have not expressed any reservations about viable populations of the turkey on any of the three National Forests in Florida.

Florida black bear (*Ursus americanus floridanus)*

Results: The black bear once ranged across the state, but is now estimated to occupy only 27% of its former range. Five major populations have been identified including Eglin Air Force Base, the ***Apalachicola, Osceola,* and *Ocala National Forests***, and Big Cypress Swamp.

The Ocala population area includes approximately 2.2 million acres of high quality bear habitat, of which approximately 384,000 acres are in National Forest ownership. The Fish and Wildlife Service noted that the State's 1994 estimate of 125 bears for the Ocala National Forest was too small. This finding appears to be supported by additional study being conducted by the FWC in cooperation with the Ocala and the Florida Department of Transportation. This study, centered on State Route 40 where it passes through the Forest, reported 252 captures of 204 separate bears between May 1999 and December 31, 2002. Almost equal portions of the Seminole RD and Lake George RD are included in the study area. During the second 6 months of the study, 11 bears were captured in only 20 trap nights of effort. The study area encompasses less than 25% of the Ocala National Forest, and the study area's population was estimated to total between 70-186 individual bears during the summer of 1999. Radio telemetry data indicated that of more than 200 road crossings of S.R. 19 and S.R. 40, only one study animal was killed in a vehicle collision. This occurred on S.R. 40, the highest road kill area for bears in Florida. While the study area is predominantly sand pine habitat, bottomland forest habitat exemplified by the Ocklawaha River system is also desirable bear habitat. We expect a total population estimate for the Ocala National Forest to be forthcoming upon completion of the study in 2003.

Black bear monitoring has been ongoing on the Ocala National Forest in cooperation with Commission biologists for many years. Track count monitoring is being accomplished annually with the results shown in Table 12. Data was not available from the FWC at time of publication.

Table 12.
Black Bear Track Count Indices
Ocala National Forest

Year	Tracks/100 miles
1991-92	24
1992-93	26
1993-94	21
1994-95	39
1995-96	27
1996-96	33
1997-98	44
1998-99	31
1999-00	56
2000-01	67
2001-02	55
2002-03	50

The 1996-1999 US Fish and Wildlife Service/Osceola National Forest/FWC/Georgia Department of Natural Resources Okefenokee-Osceola bear study area encompassed two study areas, one each in Georgia and Florida. The Florida portion (approximately 100,000 ac) included the southwest portion of Pinhook Swamp, the western portion of Impassable Bay, and adjacent private timber company lands. Private lands predominated. Study personnel captured 79 individual bears in Florida from 1996-1999.

Six bear deaths were documented on the Florida study area over this period. One death (June, 1999) was a road-kill near Eddy Tower on FL Hwy 2, east of Forest Service lands in Pinhook Swamp. Three additional deaths were the result of poaching. By contrast, the Georgia study area incurred 70 bear deaths from 1995-1999. Legal hunting accounted for 57, poaching for 7 and only 2 were road-killed bears. Bear hunting is legal in Georgia but has been indefinitely suspended in Florida.

For the period 1976 – 1992, 7 of 317 (2.2%) bear road-kills statewide were documented in Baker and Columbia Counties, which encompasses the Osceola National Forest. Commission biologists did not identify any chronic road-kill problem areas on the forest.

The FWC views the northern portion of the Osceola as a desirable area for translocation of “problem” bears from other parts of the state. A moratorium on these translocations was in effect from 1995-1999 so as not to interfere with the Okefenokee-Osceola bear study. Translocations have resumed however, and a new, more specific bear relocation policy has recently been worked out between FWC and the Forest Service.

Track counts are conducted on the Apalachicola National Forest in cooperation with Commission biologists (Table 13.). As previously noted, the Apalachicola National Forest is one of the five major black bear population sites in the state. Data was not available from FWC at time of publication.

Table 13.
Black Bear Track Counts - Apalachicola National Forest
Tracks/100 miles

Year	Apalachicola RD	Wakulla RD
1993	2	3
1994	1	1
1995	1	1
1996	0	4
1997	12	4
1998	16	11
1999	14	19
2000	3	10
2001	2	15
2002	2	10

While an overall increasing trend appears to be occurring, FWC staff suggests that these counts should be interpreted with caution. Large annual variability can occur in these counts, and the low numbers of detected tracks constrain interpretation of this data.

Evaluation: The desired outcome is a stable or slightly increasing population trend, and a decrease in nuisance bear complaints. Track counts ranged from 0 to 4 per 100 miles on Apalachicola in 1991-96, and increased to 19 in 1999. Since then, they have fluctuated between 15 and 10 tracks per 100 miles. Track counts averaged 31 per 100 miles on Ocala in 1991-98, and increased to 56 and 67 in 1999 and 2000, respectively. For 2002-2003, the Ocala track count has dropped off to 50 per 100 miles. The bear population on the Ocala NF has been influenced by relocation of 44 nuisance bears from other areas in 1999-2001. In 2001-2002, there were 241 bear complaints filed, as opposed to 95 in 2000-2001. In 2002-2003, 294 bear complaints were filed on the Ocala.

Commission biologists and National Forests in Florida personnel expect the black bear to maintain viable populations on all three National Forests. Total black bear numbers across the state, however, are likely to decline as development pressures erode the habitat base for this species on private lands. The National Forests in Florida will become even more important refuges for bear populations in the future.

White-tailed Deer (Odocoileus virginianus)

Results: Commission and Forest Service biologists have been cooperatively monitoring this species for many years on all three forests. Track count transects are being used routinely to obtain indications of trends. Data was not available from FWC at the time of publication.

Table 14.
Track Count Monitoring – White-tailed Deer
Tracks/mile

Year	Apalachicola RD	Wakulla RD	Ocala NF	Osceola NF
1992	3.81	7.63	13.6	5.5
1993	2.80	5.72	13.5	4.5
1994	3.11	3.98	14.8	ND
1995	3.10	5.23	13.8	4.1
1996	3.84	4.91	15.4	4.4
1997	6.11	5.08	12.8	6.0
1998	4.90	8.80	10.8	2.5
1999	4.20	8.50	10.5	2.3
2000	3.6	7.4	11.7	4.4
2001	3.6	7.6	10.8	2.9
2002	2.7	9.0	9.6	9.4

Although track densities are low, the last ten years of data show a relatively stable trend for the Apalachicola and the Wakulla, a long term decreasing trend for the Ocala, and an erratic, but generally increasing trend on the Osceola. Commission data show a drop in hunter harvest on the Ocala that appears to parallel the decline in the track count index. Reasons for these declines are unknown at this time, but may be related to increased levels of OHV activity.

Commission staff have used the track count indices on the Osceola National Forest to. extrapolate the herd population (Table 15). The latest year for which this extrapolation has been made is 2001.

Table 15.
Osceola National Forest
White-tailed Deer Population

Year	Population
1991	3435
1992	1355
1993	1093
1994	No count
1995	986
1996	1059
1997	1386
1998	602
1999	516
2000	1105
2001	1206

Although the estimated deer population on the Osceola National Forest had two low years in 1998-99, it may now be rebounding. The reasons for these fluctuations are unknown.

Evaluation: The desired outcome is a stable to slightly increasing trend. The trend is declining on the Ocala from 1992 through 2002 and undetermined for Apalachicola and Osceola, because the data is highly variable. Deer have remained in the landscape across the decades at varying levels, and a viable population is assured on all three national forests.

Sand Skink (*Neoseps reynoldsi)*

Results: The sand skink was not monitored in 2003 because of personnel constraints. Information reported here is based on data collections from previous years. Little is known about this species due to its fossorial habits. It is difficult to monitor, but there has been some success with detecting this creature by the use of cover board transects. On the Ocala National Forest, transects have been established in suitable habitat, each with a series of 20--12" square boards laid on cleared, sandy soil. Transects are read on a regular basis with detections showing as definitive "sine wave" tracks, caused by the skinks "swimming motion", showing under the boards. Tables 16 and 17 show the results of past monitoring.

Cover boards are monitored in March and April annually, during the peak period of sand skink activity. There are 20 boards each at 3 sites including a scrub site on Seminole RD, an ecotonal longleaf site on the Lake George RD, and a longleaf plantation on Lake George RD. The plantation had the least activity with 7 detections, ecotonal longleaf was intermediate with 13, and the scrub site had the most, with 19. All 3 sites were known to have sand skink populations. The Lake George RD longleaf site was used for density determinations in 2000. In 2002, a survey was done of the Pinecastle Bombing Range, and sand skinks were found in a new location there. The number of known sites increased from 8 in 1990 to 32 in 2002. The Ocala National Forest is the northern periphery of the sand skink's range. Population densities are lower here than in the rosemary scrub of the Lake Wales Ridge.

Table 16.
Sand Skink Cover Board Detections - Ocala National Forest
Active Boards or Buckets/Total Boards or Buckets

Year	Lake George RD	Seminole RD
1992	0/302	0/0
1993	0/0	0/300
1994	0/0	0/0
1995	35/567	0/0
1996	38/461	9/40
1997	5/256	2/200
1998	30/344	0/0
1999	0/0	0/0
2000	20/40	19/20
2001	17/40	16/20
2002	0/0	6/20
2003	1/20	0/0

Table 17.
Sand Skink Densities at Study Sites - Ocala National Forest

Year	Lake George RD	Seminole RD
1995	29/acre	No count
1996	14-24/acre	16/acre
1997	3/acre	No count
1998	31-111/acre	No count
2000	25-43/acre	68/acre
2001	No count	No count
2002	No count	No count
2003	No count	No count

Evaluation: The monitoring program for sand skink has shown presence of the species in a variety of scrub habitats, but there does not seem to be any conclusive correlation of sand skink population trends and management practices. The utility of this species as a management indicator needs to be reviewed.

Largemouth Bass (*Micropterus salmoides)*

Results: The majority of largemouth bass habitats of these National Forests are natural lakes, most of which are seepage lakes formed by solution depressions. Since these lakes have no significant surface inflow or discharge, water quality is influenced by precipitation and soil characteristics of the immediate watershed. The majority of these lakes are therefore very acid, poorly buffered, and low in nutrient concentrations and productivity. Excavated ponds, most of which were created to provide fill for highways, are managed for sport fishing on the Osceola and Apalachicola National Forests. If left unmanaged, these ponds would be acid, poorly buffered, and low in nutrient concentrations and productivity.

A largemouth bass monitoring program has been established on both types of water bodies to determine population trends and management effectiveness. These monitoring activities were designed to compare current conditions with a variety of available data. Lakes and ponds of the National Forests in Florida have been sampled with electrofishing equipment since the early 1980's. Data collected from these samples are summarized in tables containing information on relative abundance and occurrence of largemouth bass size-classes. This sampling is conducted every five years, therefore the data reported this year is the same as reported in the 2001 monitoring report.

Life history and population parameters most often utilized are spawning success and recruitment, measured as Young-of-Year (YOY) occurrence, and relative abundance of largemouth bass.

Tables 15 - 17 show the monitoring results in 9 excavated ponds on the Apalachicola National Forest, 14 excavated ponds on the Osceola National Forest, and 38 natural lakes on the Ocala National Forest.

Table 18.
Monitoring Results
Apalachicola National Forest Managed Excavated Ponds

Year	Number of samples	Samples with Largemouth bass	Samples with YOY Largemouth bass	Total Number Largemouth bass	Number Harvestable Largemouth bass	Relative Abundance Largemouth bass
1986-90	13	11	6	241	104	0.033
1991-95	35	35	15	899	450	0.102
1996-00	28	28	4	640	321	0.294

Table 19.
Osceola National Forest Managed Excavated Ponds

Year	Number of Samples	Samples with Largemouth bass	Samples with YOY Largemouth bass	Total Number Largemouth bass	Number Harvestable Largemouth bass	Relative Abundance Largemouth bass
1981-85	17	16	11	406	109	0.195
1986-90	14	12	7	185	58	0.099
1991-95	27	23	18	296	97	0.133
1996-00	40	34	21	352	203	0.138

Table 20.
Ocala National Forest Natural Lakes

Year	Number of samples	Samples with Largemouth Bass	Samples with YOY Largemouth Bass	Total Number Largemouth Bass	Number Harvestable Largemouth Bass	Relative Abundance Largemouth Bass
1981-85	41	38	14	1120	447	0.192
1986-90	21	19	10	982	382	0.108
1991-95	27	25	12	835	272	0.120
1996-00	25	21	4	271	157	0.111

Evaluation: Trends indicated by these data suggest an acceptable level of harvestable and YOY largemouth bass occurrence and an increase in relative abundance in managed excavated ponds on the Apalachicola National Forest. There are no indications of significant adverse changes in the largemouth bass population characteristics of these ponds during the sample period.

On the Osceola National Forest, the number of samples without largemouth bass is the area of greatest concern. Two of these lakes have not supported a largemouth bass population during the course of this study. These two lakes, North Deerhole and Warmouth have been fertilized, but have not been treated with lime. One of the ponds, North Deerhole, is often the most acid lake sampled on the Osceola National Forest, commonly with a pH measurement of 3.9.

Again, on the Ocala National Forest, the number of samples without largemouth bass is the area of greatest concern. Largemouth bass populations have never been observed in two of these lakes, Gobbler and Lawbreaker. The two lakes are often the most acid lakes sampled on the Ocala National Forest. Both have recorded pH measurement of 3.9. During fall 2003, 4 more lakes were sampled and found to have no YOY largemouth bass. These lakes will be sampled again in fall 2004, anticipating (hopefully) higher water levels that will increase the possibility of largemouth bass spawning. These data will be included in the updated data tables presented in 2006.

High acidity is thought to have always been a characteristic of these water bodies, and the largemouth bass has of necessity adapted to these conditions. These lakes are among the most acidic in the United States, and although it has generally been accepted that fisheries are severely impacted below pH 5.0 and are nearly destroyed below pH 4.8, there has never been a documented fisheries loss to a Florida acidic lake. Fish populations of these acid lakes may be more tolerant to acid conditions than the northern fish communities.

Trends observed in these data and concerns for future impacts of acidic precipitation must therefore be given serious consideration. Guidelines in the Forest Plan may not offer an opportunity to engage in proactive management necessary to protect the viability of largemouth bass in the natural lakes of these forests.

Forest Plan Objective:

- Provide the following habitat conditions in the next 10 years:

Table 21.
Habitat Association Objectives

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 Swamp, Strand Forest, and Dome Swamp			
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, 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

1.2 Monitoring Question: What are the habitat conditions of the major habitat associations?

Item to Measure: Acres of each habitat association by major forest type age class

Results: This monitoring item is to be reported at five-year intervals according to the Forest Plan monitoring strategy. It will be reported in the 2004 Five-Year Forest Plan Monitoring Report.

Forest Plan Objective:

- Provide habitat capability to support an increasing population of red-cockaded woodpeckers (RCWs). The 10-year population objectives are 500 active clusters on the Apalachicola habitat management area (HMA), 250 active clusters on the Wakulla HMA, 151 active clusters on the Osceola HMA, 32 active clusters on the Island HMA, and 12 active clusters on the Paisley HMA. The long-term objectives are 500 active clusters on the Apalachicola HMA, 506 active clusters on the Wakulla HMA, 457 active clusters on the Osceola HMA, 67 active clusters on the Island HMA, and 81 active clusters on the Paisley HMA. The objective for the designated recovery populations (Apalachicola Ranger District and Osceola NF) is to have at least 250 breeding pairs fledging young annually. In unrecovered populations, recruitment clusters should equal approximately 10 percent of active clusters, depending on population demographics.

1.3 Monitoring Question: Are we maintaining RCW populations on the National Forests in Florida?

Item to Measure: Number of effective groups; number of active clusters, compartment group survey

Results: All three forests are continuing their long-standing monitoring of red-cockaded woodpeckers.

Since 1994, the Osceola RCW population has increased from 45 clusters through a combination of artificial cavity installation, internal translocation, and prescribed burning. In 1999, the forest entered into a challenge cost share project with Tall Timbers Research station to update its RCW geographic information system (GIS) layer. Every known active and inactive cavity tree was precisely located with geographic positioning system (GPS) equipment. During 2000, eggs were laid at 57 clusters and 103 nestlings were banded. One male and two female fledglings were translocated within the population to help increase the number of active clusters. Twenty-eight new artificial cavities were installed to establish 7 new recruitment clusters. Due to wildlife staff vacancies, complete monitoring of RCW cavity trees and cluster status was not accomplished between 2000 and 2002. In 2003, the Osceola accomplished a complete tree status check of all known RCW clusters and re-GPS'ed all known active and inactive cavity trees. The District currently has 77 active clusters.

The Apalachicola National Forest contains two populations, the Wakulla and Apalachicola. The latter is the only recovered population at 486 known active clusters. The Apalachicola population annually provides fledglings for translocation to other populations in Florida, Georgia, Mississippi, and Alabama to help enhance their recovery. In 2003, 206 nestlings were banded and 20 fledglings were translocated to 5 populations. The Apalachicola population has remained stable since the early 1990s.

The Wakulla population contains 134 known active clusters. This represents a decline of approximately 11% from the 150 active clusters known in 1995 and 28% from the 186 known in 1991. The reason for the decline is still unknown. In the early spring of 2004, the Forest worked with the USFWS RCW Recovery Coordinator to develop a more detailed Plan of Work that we hope will give us a better indication of what may be causing the decline. This population is not providing fledglings for the translocation effort.

The Ocala population is the smallest of the four populations on the National Forests in Florida. In 1996 they were down to 10 active clusters. By 2001 there were 30 active clusters. Nine clusters had single birds for at least part of the year, and 17 of 21 (81%) potential breeding pairs nested. A record high of 31 fledglings was produced, of which 13 were banded as nestlings. In 2002, the District recorded 29 active clusters with a total of 97 active cavity trees. This population has benefited significantly from translocations from the Apalachicola. Prescribed burning to improve habitat and artificial cavity installation and translocation are all being used to enhance this population. Table 19 shows the trends in active clusters of the four RCW populations on the National Forests in Florida.

Table 22.
Red-cockaded Woodpeckers – National Forests in Florida
Active Clusters

Year	Apalachicola RD	Wakulla RD	Osceola NF	Ocala NF
1991	503	186	44	12
1992	503	182	43	11
1993	494	150	43	13
1994	500	Incomplete	45	10
1995	504	150	51	15
1996	504	154	53	10
1997	505	157	51	10
1998	505	125	Incomplete	13
1999	486	125	66	18
2000	486	138	Incomplete	22
2001	488	140	Incomplete	30
2002	486	140	Incomplete	29
2003	485	134	77	37

Evaluation: By 2009, the goal by HMA is 500 for Apalachicola, 250 for Wakulla, 151 for Osceola, 32 for Island (LG), and 12 for Paisley (Seminole).

The Apalachicola population is relatively stable, the Wakulla shows a decline, and the Osceola and Ocala populations are increasing. The steady increase since 1997 on the Ocala is in part due to translocations of young birds from the Apalachicola RD. The number of active clusters on the Ocala has tripled in last five years, but non-paired birds occupy 30% of those clusters.

With the continued emphasis on prescribed burning, aggressive application of artificial nest structures, and our successful translocation program, the viability of the red-cockaded woodpecker is ensured on the National Forests in Florida.

Forest Plan Standards and Guidelines WL-1 through WL-3 on page 3-27 of the Forest Plan provide for an exception on the Apalachicola RD to the foraging requirements found in the RCW EIS.

1.4 Monitoring Question: What are the effects of the reduced foraging standards on the Apalachicola National Forest?

Items to Measure: Cluster activity status, group size, nesting success, chicks reaching banding age, and number fledged per active group

Results: It is too early in the Forest Plan implementation process to fully assess the effects of the reduced foraging standards, or to draw any conclusions. Table 23 presents some of the demographic trend information that will help us determine the effects of the reduced foraging standards. Additional studies have been placed in areas where the reduced standards have been applied.

Table 23.
RCW population demographics, Apalachicola RD

Year	Potential Breeding Groups	Average Group Size	Nesting Success (Total Attempted/ Total Successful)	Chicks to Banding Age	Fledglings Per Group
1999	480	2.40	200/166	394	1.8
2000	486	2.57	155/112	321	2.3
2001	483	2.55	107/80	218	1.8
2002	480	ND	112/ND	234	ND
2003	480	2.46	109/72	206	2.1

Forest Plan Objective:

- Maintain a dynamic system of at least 45,000 to 55,000 acres of habitat capable of supporting scrub jays on the Ocala NF. The 10-year population objective is 742 to 907 groups.

1.5 Monitoring Questions: What are the population trends of scrub jay? How is management affecting scrub jay? How many acres are suitable for scrub jay?

Items to Measure: Scrub jay population demographics, reproduction, dispersion, number of acres in 3-15 year age class in sand pine.

Results: The scrub jay is federally listed as threatened. It is found only in peninsular Florida, nesting in oak or pine scrub habitat. The Ocala is the only National Forest with this habitat type. The jay was selected as an indicator of healthy scrub, since this species nests only in early seral stage scrub. It is quite selective, being limited to thick scrub in sandy areas.

Because prescribed fire is so difficult to control in scrub habitats, and because of smoke management issues, timber harvest is the primary management tool for maintaining scrub jay habitat on the Ocala National Forest. Clear-cutting of mature sand pine regenerates the scrub habitat necessary for the jay. The resulting scrub is generally suitable for nesting for 10 - 12 years. At this time the scrub is overtopped by young sand pine, rendering the site unsuitable for the jays. A regular cycle of sand pine regeneration is being employed to maintain the jays across the scrub on the Ocala National Forest. At the end of FY 2000, there were 62,627 acres of sand pine scrub in the 3-15 year old age class. The latest data we have available (Spring, 2003) indicates that we currently have 51,963 acres of 3-15 year old sand pine scrub on the Ocala.

Forest wide monitoring for numbers of clans (family groups) and individual birds has been done since 1994. The Ocala National Forest surveys approximately 25% of suitable habitat per year by playing a scrub jay call tape and recording number of birds sighted per site. An experienced observer interprets the number of groups based on the birds' behavior. New records are added to the Active List and formerly recorded sites are moved to historical status based on survey results. Results are shown in Table 24. Demographic monitoring by Dr. Kay Franzreb of the Forest Service's Southern Research Station began in November 2000.

Table 24.
Ocala National Forest Scrub Jays
Groups/birds

Year	Lake George RD	Seminole RD
1994	454/no count	245/no count
1995	460/1313	247/694
1996	466/1398	249/693
1997	468/1336	259/774
1998	473/893	272/799
1999	333/893	413/1050
2000	351/1020	412/1048
2001	384/1120	401/969
2002	421/1258	394/955
2003	425/1251	355/881

Evaluation: The number of groups increased 13% from 1994-2001. In 2002, the total number of groups increased 4% over 2001 and the total number of birds increased by 6%. For 2003, the number of groups decreased from 815 to 780, and total birds decreased from 2213 to 2132. Both are decreases of 4%, and this is the first overall decrease since we have been maintaining monitoring records on scrub jays. The 10-year population objective in the Forest plan is to maintain a population between 742 to 907 groups. This objective is being met.

The viability of this species on the Ocala National Forest appears to be insured through the application of sand pine regeneration, thereby creating early seral stage scrub habitat necessary for breeding. The acres of sand pine scrub in the 3-15 year old age class is within the objective; however, there is concern about potential conflicts between the Forest Plan standard (VG-24) of maintaining 5% of suitable sand pine acres in age class 55-80 and the objective (Objective #9) to maintain 45,000 to 55,000 acres in scrub jay habitat.

An in-depth analysis was conducted on the Seminole Ranger District. Several scenarios were modeled using varying timber harvest rates and including scrub jay habitat in management areas unsuitable for commercial timber production. Given the 5% standard, scrub jay habitat on the Seminole Ranger District levels off at about 19,000 acres. Since the Seminole represents about 43% of the total scrub acres on the Ocala, the District would be expected to provide 43% of the suitable habitat objective, or 19,350 acres. This scenario is based on the assumption that burning and other disturbances occur as planned in the areas unsuitable for timber production.

Forest Plan Standards and Guidelines for PETS animals are found on pages 3-26 through 3-30 of the Forest Plan and includes standards and guidelines **WL-1** through **WL-19.**

Forest Plan Standards and Guidelines for PETS plants are found on pages 3-17 through 3-18 of the Forest Plan and includes standards and guidelines **VG-1** through **VG-3.**

1.6 Monitoring Questions: Are we maintaining viable populations of PETS animal species and habitats to support them?

Item to Measure: Number of PETS animals or acres of suitable habitat

Results and Evaluation

Birds

Endangered
***Mycteria americana*/Wood Stork**

***Picoides borealis*/Red-cockaded Woodpecker**

Threatened
***Aphelocoma coerulescens*/Florida Scrub-Jay**
***Haliaeetus leucocephalus*/Bald Eagle**

Sensitive
***Aimophila aestivalis*/Bachman's Sparrow**
***Grus canadensis pratensis*/Florida Sandhill Crane**

Florida Scrub-jay, **Bald Eagle** and **Red-cockaded Woodpecker** are discussed previously in this report as Management Indicator Species.

Wood Storks are found predominantly in Florida. They nest north to the Okefenokee Swamp in Georgia and on rare occasions in coastal South Carolina. During the non-breeding warmer months, they are fairly common over much of Florida. Primary nesting habitats are swamps, tall trees along lakeshores or thickets of trees or large shrubs, mainly near fresh water.

A wood stork rookery has been documented in the SW portion the Osceola NF, south of I-10. The extended drought since 1998, however, has confounded efforts to determine trends for the species on the forest. On 4/15/04, it was found that this rookery had recently been reactivated, with 25 birds in residence. This is brand-new information, and we do not yet have any data on nests. Nesting has yet to be documented on either the Ocala or Apalachicola NFs.

Bachman's Sparrow populations have declined range wide in recent decades. It favors open pine stands with grasses and scattered shrubs, oaks, or other hardwoods. Maintenance of old growth longleaf with 20-25 foot spacing between trees, and thinning benefits this species as well as the red-cockaded woodpecker. Nesting requirements include dense herbaceous cover interspersed with, or bordered by, shrubs and trees. Forested areas burned between the months of April and August will benefit this bird, by stimulating an increase in herbaceous vegetation.

Data from the various BBS routes on the Apalachicola NF; the Ft. Gadsden BBS route, in the southwest corner, the Bloxham route in the north-central portion of the Forest, the Apalachicola route through the central and western portions of the Forest, and the Alligator Point route in the southeastern corner of the Forest all suggest slightly different trend information. Combining of the data (Figure 13.) shows that while the number of birds seen annually is quite variable, the trend over the last twelve years is stable at about 40 birds per year.

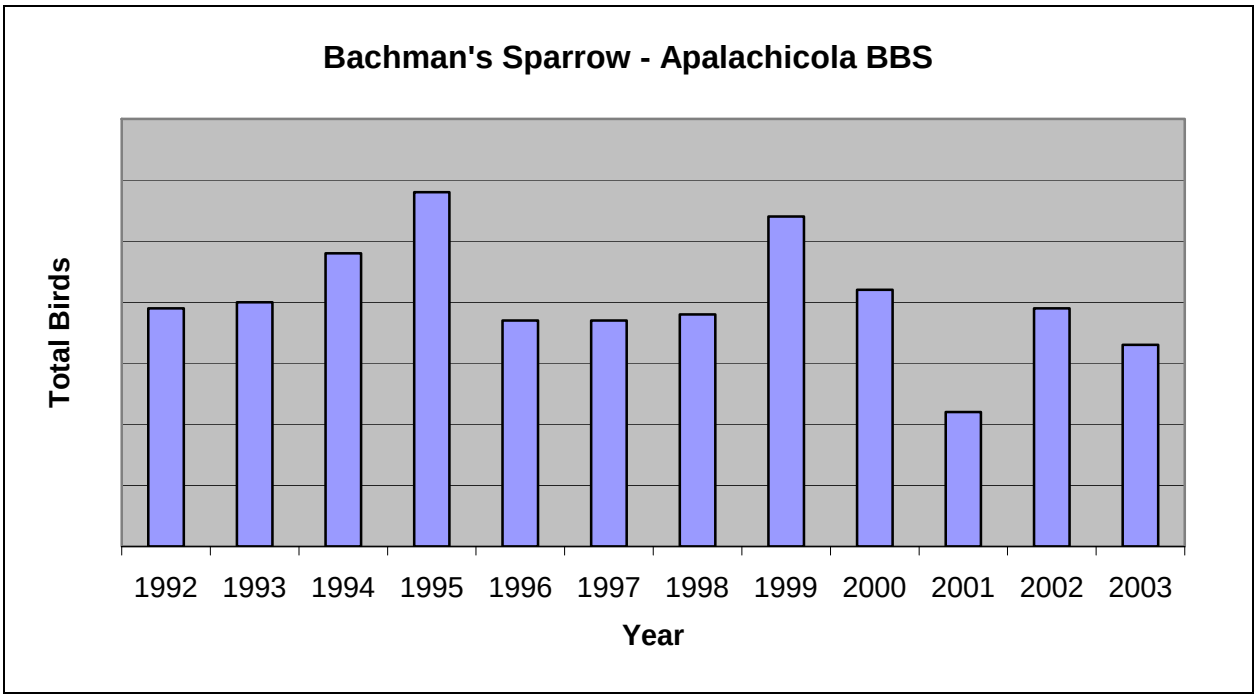


Figure 11. BBS Route summary, 1992 - 2003 for Bachman's Sparrow - Apalachicola NF.

The Apalachicola's data at the R8 Bird sampling points shows the following for Bachman's sparrow:

Table 25.
Apalachicola NF
Bachman's Sparrow – R8 Bird Points

Year	Total Birds	Points Sampled	Birds/Point
2000	21	30	0.7
2001	43	30	1.43
2002	37	60	0.62
2003	62	60	1.03

The Osceola BBS route data suggests that this species is found in low numbers with a declining trend along the northern portion of the forest. R8Bird point data collected in 2002 and beyond will provide information to supplement the BBS data and provide a better indication of the status of the Bachman's sparrow on the Osceola National Forest.

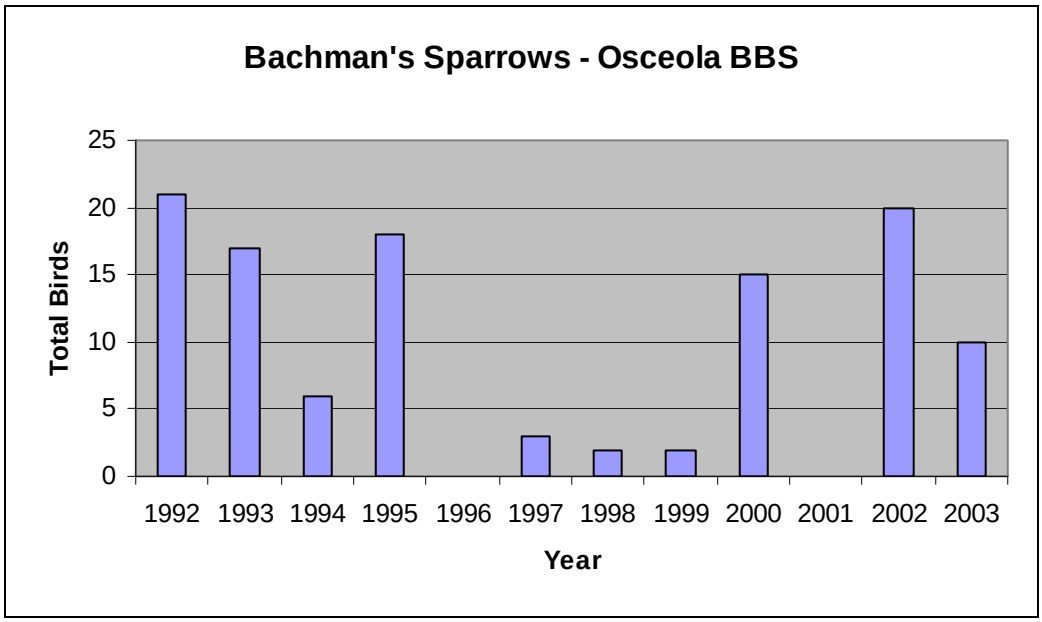


Figure 12. BBS Route summary, 1992 - 2003 for Bachman's Sparrow - Osceola NF.

The Ocala BBS data are not applicable as an index for Bachman's sparrow because suitable habitat is not well represented on this route. R8Bird point data show Bachman's sparrow to be the second most common species in the Ocala National Forest's longleaf pine sandhills habitat. An average of 2.2 Bachman's sparrows per point have been counted from the 60 points monitored on the Ocala over the last 6 years (1997-2002). Assuming 2 acres per point, the population index averages 110 birds per 100 acres of suitable habitat.

Table 26.
Bachman's Sparrow at R8Bird Longleaf Points - Ocala National Forest
Birds Per Point

Year	Lake George RD Riverside Island	Seminole RD Paisley Woods
1997	.85	1.5
1998	1.65	1.6
1999	2.15	2.45
2000	2.55	1.45
2001	2.9	1.1
2002	2.9	0.93
2003	1.5	0.7

Primary breeding habitat for **Florida Sandhill Crane** is found in prairies with marsh areas and small ponds as well as open pine savannas with small pools or ponds. Wintering habitat is similar, but they can also be found in drier areas. They can be seen in cattle pastures and along the margins of fresh water. The crane is found throughout peninsular Florida in low densities during both breeding and wintering seasons.

The BBS routes on the NFs in Florida have not been detecting this species. Potentially suitable habitat is found in the savannas on the western portion of the Apalachicola NF and the prairies on the Ocala NF. The Ocala R8Bird points near Lake Delancy in central Riverside Island record the Florida sandhill crane every year. The extended drought has affected breeding habitats on National Forest lands.

Table 27.
Sandhill Crane at R8Bird Points - Ocala National Forest
Birds Counted

Year	Lake George RD Riverside Island
1997	2
1998	3
1999	6
2000	6
2001	7
2002	2
2003	2

Fish

Threatened
***Acipenser oxyrinchus desotoi*/Gulf Sturgeon**

Sensitive
***Acipenser oxyrhinchus oxyrhinchus*/Atlantic Sturgeon (added to list effective 01/01/2002)**
***Alosa alabamae*/Alabama Shad (added to list effective 01/01/2002)**
***Ameiurus serracanthus*/Spotted bullhead (added to list effective 01/01/2002)**
***Cyprinella leedsi*/Bannerfin Shiner (dropped from list effective 01/01/2002)**
***Micropterus notius*/Suwannee Bass**

The **Gulf Sturgeon** is an anadromous fish which breeds in all the major rivers that empty into the eastern Gulf of Mexico. It is listed as a threatened species because of documented declines in population size in all rivers except the Suwannee River. It is likely that habitat degradation and lost of spawning areas are a major cause of the declines in gulf sturgeon populations. Dams on both the Apalachicola and Ochlockonee river systems prevent sturgeon from reaching historical spawning sites.

Forest Service ownership along the Apalachicola River is limited to approximately 7 miles of the east bank. This amounts to only about 2.9% of the 103 miles of the Apalachicola in the State of Florida. A 1999 survey of the river by USFWS found 321 gulf sturgeon in river reaches just below Jim Woodruff dam; well to the north of National Forest ownership, and no sturgeon as far south on the river as the National Forest ownership. Forest Service ownership on the Ochlockonee River is greater, and amounts to approximately 6 miles on both sides of the river and 25 miles on one side of the river. According to the USFWS, gulf sturgeon is only known from the Ochlockonee from Mack Landing south (to Ochlockonee Bay). That represents about 8 miles of one side Forest Service ownership and about ¼ mile of ownership on both sides. In a recent census (May 2004) they found 115 fish in this stretch of the river. Early in 2003, the US Fish and Wildlife Service designated these rivers, as well as river systems in Louisiana, Alabama, and Mississippi as critical habitat. The Forest Service's relatively minor ownership of the banks and the application of Forest Plan Standards & Guides (VG-8, WA-1 through WA-7), Forest Service management activities are not expected to have any effect on this species. Monitoring and trend information on this subspecies will be obtained periodically from the Florida Fish and Wildlife Conservation Commission and the US Fish and Wildlife Service.

The **Atlantic Sturgeon** lives in the Atlantic Ocean from Florida to Labrador, Canada. The Atlantic sturgeon makes long migrations, moving south to Florida in the winter. It has been collected from the St. Johns River in Putnam County. It "may have bred in the St. Johns River drainage at one time, although this has never been proved. In any event, reproduction almost certainly does not occur there

today" *(Gilbert, C. R. (ed.) 1992. Fishes. Volume II in Ashton, R. (series ed.) Rare and Endangered Biota of Florida. University Presses of Florida. Gainesville, FL 247pp.)*.

The Ocala National Forest has ownership of about a quarter of the length of the western bank of the St. Johns River (including Lake George). Due to limited management activities in the zone of influence for the St. Johns River, and the application of Forest Plan Standards & Guides VG-8, WA-1 through WA-7, Forest Service management activities are not expected to have any effect on this species. Any monitoring and trend information available on this subspecies will be obtained from the Florida Fish and Wildlife Conservation Commission and the US Fish and Wildlife Service. This subspecies is a candidate for federal listing.

The **Alabama Shad** occurs in the Gulf of Mexico and enters drainages from the Suwannee River to the Mississippi River for spawning. Due to limited management activities in the zone of influence for the Apalachicola, Suwannee, and Ochlockonee Rivers, and the application of Forest Plan Standards & Guides VG-8, WA-1 through WA-7, Forest Service management activities are not expected to have any effect on this species. Any monitoring and trend information available on this species will be obtained from the Florida Fish and Wildlife Conservation Commission and the US Fish and Wildlife Service. The species is a candidate for federal listing. It was added to the revised Southern Regional Foresters Sensitive Species List effective January 1, 2002.

The **Spotted Bullhead** occurs in the lower drainages of the Apalachicola, Ochlockonee, and Suwannee River systems. In 1978 this species was listed as Rare by the Florida Committee on Rare and Endangered Plants and Animals, a committee of the Florida Academy of Sciences. In 1992 it was eliminated *(Gilbert, C. R. (ed.) 1992. Fishes. Volume II in Ashton, R. (series ed.) Rare and Endangered Biota of Florida. University Presses of Florida. Gainesville, FL 247pp.).* Others were not in agreement with this assessment, because ten years later, the species is a candidate for federal listing. It was added to the revised Southern Regional Foresters Sensitive Species List effective January 1, 2002. Due to limited management activities in the zone of influence for the Apalachicola, Suwannee, and Ochlockonee Rivers, and the application of Forest Plan Standards & Guides VG-8, WA-1 through WA-7, Forest Service management activities are not expected to have any effect on this species. Any monitoring and trend information available on this species will be obtained from the Florida Fish and Wildlife Conservation Commission and the US Fish and Wildlife Service.

The **Bannerfin Shiner** was dropped from the revised Southern Regional Foresters Sensitive Species List effective January 1, 2002.

The **Suwannee Bass** is restricted to the Suwannee and Ochlockonee Rivers systems of Florida and Georgia. It generally prefers more rapidly flowing water along rocky shoal areas, but is not restricted to these areas. It can be found in large springs and spring runs as evidenced by its presence in the spring fed lower reaches of the Santa Fe and Ichetucknee rivers, which are tributary to the Suwannee.

Reproduction, including nest construction, is similar to largemouth bass. Degradation of water quality or habitat in the Suwannee and Ochlockonee rivers could threaten this species. As with mussels, watershed impacts related to agriculture, urbanization, and water management outside National Forest lands will have the definitive impacts on this species.

Reptiles

<u>Threatened</u>
***Alligator mississippiensis*/American Alligator**
***Drymarchon corais couperi*/Eastern Indigo Snake**
***Neoseps reynoldsi*/Sand Skink**

<u>Sensitive</u>
***Gopherus polyphemus*/Gopher Tortoise**
***Graptemys barbouri*/Barbour's Map Turtle (dropped from list effective 01/01/2002)**

***Lampropeltis getulus goinii*/Apalachicola King Snake**
***Pituophis melanoleucus mugitus*/Florida Pine Snake**
***Pseudemys concinna suwanniensis*/Suwannee Cooter Turtle**
***Sceloporus woodii*/Florida Scrub Lizard**
***Stilosoma extenuatum*/Short-tailed Snake**

American alligators can be found in ditches, lakes, marshes, ponds, rivers, streams, and even brackish water. American alligators can occur in any wetland habitat. American alligator habitat exists on the Apalachicola, Ocala, and Osceola NFs Breeding has been confirmed on the forests.

Historically, alligators were depleted from many parts of their range because 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 has listed American alligators as “Threatened because of similarity of appearance”, and still regulates the legal trade in alligator skins, or products made from them, in order to protect endangered species that have skin similar in appearance to alligators. The FWC permits alligator harvest in selected areas around the state, and the Ocala Wildlife Management Area (WMA) is the only area currently permitted on the National Forests in Florida. Records of alligator harvest from 1997 through 2003 are available from FWC:

Table 28.
Alligator harvest, Ocala WMA

Year	Harvest Quota	Harvest
1997	5	4
1998	5	1
1999	5	3
2000	4	4
2001	ND	2
2002	ND	3
2003	ND	3

The **Eastern Indigo Snake** is a large, docile, nonpoisonous snake growing to a maximum length of about 8 feet. 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.

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. Eastern indigo snake habitat exists on the Apalachicola, Ocala, and Osceola NFs. Local herpetologists feel that indigos are still present in low numbers on all three forests, but no sign of the species has been

found since a 1998 sighting on the Osceola. We are aware of no sampling method that would help us detect a species that occurs at such low densities, so we are reliant on incidental sightings reported by employees or other friends of the Forests. The decline is attributed to a loss of habitat due to land uses as construction, farming, forestry, pasture and to over collecting for the pet trade. The snake's large size and docile nature have made it much sought after as a pet. The negative 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 is discussed in the Management Indicator Species section of this report.

The **Gopher Tortoise** occurs in every Florida county, but is currently most numerous in southern Georgia and the northern and central portions of peninsular Florida. It has been documented on all three National Forests. This species requires well-drained loose soil for burrow construction, low-growing herbaceous forage, and open sunlit areas for nesting. The tortoise is primarily associated with longleaf pine sandhills, but is also found in sand pine scrub, dry prairies, pine flatwoods and mixed hardwood-pine communities. Old fields and roadside shoulders often support relatively high densities. Tortoises are found in relatively high densities on the Florida Gas pipeline right-of-way and Munson sandhills on the Apalachicola NF, the Olustee battlefield site on the Osceola NF and in the sand pine scrub on the Ocala NF. The latter forest probably has the highest numbers due to the greater extent of deep, well-drained sandy soils and the early seral stage habitat created by sand pine clearcuts.

There is currently no forest-wide trend information for any of the forests, but revised Forest Plan Standards and Guidelines provide for tortoise protection. Standards WL-10, 11 & 12 provide for burrow protection and safe movement of individuals away from possible harm from management activities. The Forests are approved (by the FWC) recipient sites for gopher tortoises translocated from a variety of private land development sites. We have developed a translocation monitoring protocol to which potential applicants must adhere if they want to move tortoises to the forest.

The **Barbour's Map Turtle** was dropped from the revised Southern Regional Foresters Sensitive Species List effective January 1, 2002.

The **Apalachicola King Snake** has been confirmed in Franklin and Liberty counties. This snake lives primarily along wetland margins of bayheads, creek swamps, acid bogs, savannahs, roadside ditches, dwarf cypress stands, and evergreen shrub communities. Individuals occasionally wander into adjacent longleaf pine flatwoods. Little is known about the life history and ecology of this snake. Food probably consists of snakes, amphibians, eggs of ground-nesting birds and turtles, and rodents. There is no Forest Service data on population trends.

Florida Natural Areas Inventory has confirmed **Florida Pine Snake** in counties that encompass portions of all three NFs in Florida. The statewide range of the snake extends from the Florida panhandle east across north Florida and south to Lake Okeechobee. Habitat includes longleaf pine – xerophytic oak woodlands, sand pine scrub, well-drained pine flatwoods and sandhill sites. There is little information on this species, but it has been described as being extremely fossorial. It particularly seeks out the tunnel systems of pocket gophers, and the burrows of gopher tortoises to a lesser extent. Prescribed fire is recommended as a habitat management tool to insure the survival of this species.

Gopher tortoise Standards WL-10, 11 & 12 as well as the Forestwide objective to burn all burnable acres on a three-year average should enable the pine snake persist to persist on the forest. There is no forest wide population and trend data on this species.

The **Suwannee Cooter** is a river cooter, or turtle. In Florida, the river cooters are restricted to rivers, spring runs, and associated backwaters and impoundments that drain into the Gulf of Mexico. They

are herbivorous, feeding principally on aquatic vegetation. They rarely venture onto land except to nest -- a behavior that probably takes place within a relatively short distance of the wetland (hundreds of yards). Most nesting occurs from April through early August. *Pseudemys concinna suwanniensis* is a variety found from the Tampa Bay region northwestward to the Apalachicola River, and has been confirmed to occur in Leon, Wakulla, Franklin, and Liberty counties.

Threats to this species include over harvesting for human consumption as well as habitat degradation caused by impoundments, dredging, and pollution. The Florida Fish and Wildlife Conservation Commission has established legal harvest limits for this species, which offers protections from excessive harvest. Current management standards (VG-8) in the forest plan direct that hardwood & cypress stands will not be managed for timber production. This offers habitat protection in those areas encompassed by National Forest ownership. Due to this protection, the cooter is low priority for monitoring and inventory. As with the Barbour's map turtle, we will rely on the latest information available from the Florida Fish and Wildlife Conservation Commission and the Florida Natural Areas Inventory for species trend information.

Florida Scrub Lizard is found on the Ocala NF with a few records adjacent to the northern and southern borders of the Ocala NF. It prefers open sandy areas bordering sand pine scrub and sandhill associations, and could be described as a forest edge species. Habitat loss is the biggest threat to the scrub lizard in the State. Scrub-jay management and sand pine management as prescribed in the Forest Plan will sustain forest edge in sand pine habitats on the Ocala. There is no forest wide population and trend data on this species, though several studies have been done in the Ocala National Forest that determined scrub lizard population densities under varying habitat conditions.

Little is known of the life history and ecology of the **Short-tailed Snake**. It is a burrower, seldom seen above ground except in the spring and fall (April and October). It is restricted chiefly to long-leaf pine – turkey oak associations, but is occasionally found in sand pine scrub. Its original range appears to include only the Ocala NF, which contains one of the largest remaining blocks of appropriate habitat. Management Objectives and Standards and Guidelines for the red-cockaded woodpecker in the Forest Plan will also provide protection for this species. There is no forest wide population and trend data on this species.

Amphibians

Threatened
***Ambystoma cingulatum*/Flatwoods Salamander**

Sensitive
***Amphiuma pholeter*/One-toed Amphiuma (added to list effective 01/01/2002)**
***Desmognathus apalachicolae*/Apalachicola Dusky Salamander (added 01/01/2002)**
***Notophthalmus perstriatus*/Striped Newt**
***Rana capito aesopus*/Florida Gopher Frog (dropped from list effective 01/01/2002)**

Adult **Flatwoods Salamanders** are fossorial (adapted for living underground). Breeding takes place in isolated ephemeral ponds, typically open cypress or bay domes with well-established grassy vegetation in the water. The adults migrate to and from the breeding ponds, sometimes traveling over a mile from the pond. Adults have been observed crossing paved highways and dirt roads during migration. By analogy with similar species, the adults can be expected to spend the majority of their time underground. It is assumed that adults are dependent on the thick ground cover provided by fire maintained wiregrass communities, especially during breeding migrations. Optimum habitat is open, mesic woodlands of pine flatwoods maintained by frequent fires

The flatwoods salamander is found in the Apalachicola National Forest and in one compartment on the Osceola National Forest. The known breeding ponds on the Apalachicola National Forest are in the Apalachicola Savannahs land-type association. The Apalachicola National Forest flatwoods salamander population is being studied in a cooperative project with the Forest, The Nature

Conservancy, and the FWC as partners. Even though the principal investigator is hampered by dry weather (see discussion below), he has discovered a number of previously unknown potential breeding ponds. One concentration of flatwoods salamanders has virtually disappeared from the Forest, apparently as the result of heavy site preparation (chopping and bedding) in and around breeding ponds on nearby private land. They may have also suffered from mortality while crossing a highway between the breeding ponds and the Forest. No breeding ponds for the flatwoods salamander have been confirmed on the Ocala NF, which lacks suitable habitat.

Temporary ponds are being degraded by mud bogging throughout the urban interface zone, which includes all of the Munson Sandhills. A large area was closed to vehicular traffic in 2003 because of the damage being caused by mud bogging. There is some concern that prescribed burning may have a lower tendency to burn through temporary ponds than does natural wildfire. It is possible that failure to reduce the duff layer may slowly reduce reproductive habitat for flatwoods salamanders. Extensive surveys for the flatwoods salamander have only been possible occasionally since Florida's extended drought began in 1998, because most breeding ponds have been dry.

The **One-toed Amphiuma** inhabits mucky soils in alluvial swamps and floodplain streams in the Florida and Alabama panhandles and the northern Gulf coast of Florida. Only 30 occurrences are known. This species was added to the Sensitive list effective 01/01/2002.

The **Apalachicola Dusky Salamander** inhabits forested ravines and mucky floodplain and bottomland forests. They occur in Florida, Alabama, and Georgia. This species has been confirmed in Bradwell Bay Wilderness Area in the Apalachicola National Forest.

The **Striped Newt** is rare and localized in occurrence. They breed in isolated ponds in flatwoods, longleaf pine sandhills, and sand pine scrub habitats. Recent surveys have located only 32 breeding ponds in the entire geographic range of the striped newt - 17 of which are on the Apalachicola National Forest. All of the known breeding ponds on the Apalachicola National Forest are in the Munson Sandhills. The adult (eft stage) newts travel into the uplands surrounding the breeding ponds. Almost nothing is known about their biology in the uplands except they may travel considerable distances (at least half a mile and perhaps up to a mile and a quarter). A striped newt survey of 132 ponds in the Ocala National Forest in 1993 confirmed the striped newt in only one pond near Lake Delancy. The newts were neotenic (adults remained aquatic instead of metamorphosing to the terrestrial form). However, an 8-year study of 8 ponds by Dr. Katie Greenberg of the Southeastern Research Station in Norwalk and Salt Springs Islands confirmed newts in all 8 ponds. This study showed that newts may occur in any isolated pond in suitable habitat, but that several years of monitoring may be needed to catch the cyclical and eruptive pattern of newt reproduction (Table 29). This study confirmed the presence of terrestrial efts in the Ocala National Forest population, which was previously assumed entirely neotenic.

Table 29.
Ocala NF Pond Monitoring
Number of ponds with records, Total number captured

Year	Striped Newts	Gopher Frogs	Round-tailed Muskrat
1994	4, 15	7, 46	4, 6
1995	4, 4	8, 441	2, 4
1996	4, 10	8, 240	0, 0
1997	6, 94	7, 58	3, 3
1998	7, 777	8, 655	0, 0
1999	8, 876	4, 8	3, 3
2000	7, 264	5, 7	1, 1
2001	6, 101	7, 33	1, 1
2002	8,37	8,89	1,1
2003	1,13	8,107	0,0

Florida Gopher Frog was dropped from the revised Regional Forester's sensitive list effective January 1, 2002.

Mammals

Endangered
***Felis concolor coryi*/Florida Panther**
***Myotis grisescens*/Gray Bat**
***Trichechus manatus latirostris*/Florida Manatee or West Indian Manatee**

Sensitive
***Corynorhinus rafinesquii*/Rafinesque's Big-eared Bat (added to list effective 01/01/2002)**
***Mustela frenata peninsulae*/Florida Long-tailed Weasel (dropped from list 01/01/2002)**
***Neofiber alleni*/Round-tailed Muskrat**
***Podomys floridanus*/Florida Mouse**
***Sciurus niger shermani*/Sherman's Fox Squirrel**
***Ursus americanus floridanus*/Florida Black Bear**

The **Florida Panther** is a large, long-tailed felid 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. 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. Currently, the wild population is estimated at 30 to 50 adult animals.

In general, panther population centers are in large remote tracts with adequate prey, cover, and reduced levels of disturbance. There are currently no known Florida panthers using National Forest lands. The Osceola NF is a possible reintroduction site. It was used in the mid-1990's as a reintroduction test site when sterile western cougars were released to test the possibility of future releases of Florida panthers.

Populations of **Gray Bats** 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 the range is always patchy, but fragmentation and isolation of populations has 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 measures 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.

Gray bat colonies are restricted entirely to caves or cavelike habitats. Nine known caves are believed to house about 95 percent of the hibernating population. There are no caves on the National Forests in Florida 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.

The **Florida Manatee**, or West Indian Manatee, is a large gray or brown aquatic mammal. 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.

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

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. The manatee population was probably more abundant in the 18th or 19th century than today. Initial population decreases probably resulted from over harvesting 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. 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.

The **Rafinesque's Big-eared Bat** inhabits forests throughout the southeast. They use caves in mountainous areas and hollow trees in the southern coastal plain. This species has been confirmed in the Ocala National Forest in the Little Lake George Wilderness Area. A big-eared bat monitoring protocol has yet to be developed for the National Forests in Florida.

The **Florida Long-Tailed Weasel** was dropped from the Regional Forester's sensitive species list effective 01/01/2002.

The **Round-tailed Muskrat** is restricted to Florida and southeastern Georgia. Shallow marshes with emergent vegetation constitute preferred habitat. The best habitat on the NFs in Florida likely occurs in the wet prairies on the Ocala NF. The muskrat has been confirmed in Franklin, Leon, Marion and Wakulla counties (encompassing portions of the Apalachicola and Ocala NFs); and is likely in Baker, Columbia, Lake, and Liberty counties (encompassing portions of all three NFs in Florida). The extended drought has dried prairies in the Ocala National Forest that had round-tailed muskrat colonies about 10 years ago. The muskrat has persisted in creeks and streams, such as Juniper Creek, and has been recorded at small isolated ponds in sandhills habitat that are monitored for the striped newt and other amphibians (ref. Table 29). Muskrats have been recorded at 7 of the 8 sampled ponds, and in 7 of the 10 years included in the study. Because the muskrats were not trapped regularly, they were dispersing individuals or became trap-wise if resident. None of the ponds had the characteristic dome-shaped "muskrat house" that is formed of emergent wetland vegetation.

The known range of the **Florida Mouse** includes the northern two-thirds of the Florida peninsula and an isolated area near Carrabelle in Franklin County. This range encompasses portions of the Osceola

and Ocala National Forests. There is no estimate of the statewide population, but the statewide trend is likely downwards due to habitat loss.

The mouse is restricted to fire maintained, dry, upland vegetation on deep sandy soils. The major habitats are scrub, including sand pine scrub and scrubby flatwoods, and sandhill. Scrub is the primary habitat. It has been confirmed in Marion and Lake counties (encompassing portions of the Ocala NF) and is likely in Columbia County (encompassing portions of the Osceola NF) (FNAI, 1997). Due to the abundance of preferred habitat, this species most likely occurs in the greatest numbers on the Ocala NF. Deep sandy soils are not found on the Osceola NF.

The **Sherman's Fox Squirrel** is found on all three NFs in Florida. Total population size is unknown, but this species has declined in proportion to the loss of mature, fire-maintained longleaf pine. Longleaf pine – turkey oak sandhills and flatwoods are the optimum habitat for this squirrel. Home range size averages 100 acres for males and 50 acres for females.

Leaf nests predominate over cavities, and the squirrel may use up to 30 nests per year. More nests occur on the low slopes of sandhills rather than the uplands. The highest quality habitat might be along the edge of longleaf pine savannah and live oak forest, because live oak acorns appear to be a major food source when turkey oak acorn crops fail.

The **Florida Black Bear** is discussed in the Management Indicator Species section of this report.

Mollusks

Endangered
***Ambla neislerii*/Fat Three-Ridge Mussel**
***Lampsilis subangulata*/Shiny-Rayed Pocketbook**
***Medionidus penicillatus*/Gulf Moccasinshell**
***Medionidus simpsonianus*/Ochlockonee Moccasinshell**
***Pleurobema pyriforme*/Oval Pigtoe**

Threatened
***Elliptoideus sloatianus*/Purple Bankclimber Mussel**

Sensitive
***Alasmidonta wrightiana*/Ochlockonee Arcmussel**
***Anodonta heardi*/Apalachicola Floater (added to sensitive list effective 01/01/2002)**
***Aphaostracon pycnus*/Dense Hydrobe**
***Cincinnatia vanhyningi*/Seminole Spring Siltsnail (added effective 01/01/2002)**
***Utterbackia peggyae*/Florida Floater (added to sensitive list effective 01/01/2002)**

The **Dense Hydrobe** and **Seminole Spring Siltsnail** are endemic to Alexander Creek and its tributaries in the Seminole District, Ocala National Forest.

The other mollusks on the PETS list occur near and within the Apalachicola National Forest in the Apalachicola and/or the Ochlockonee river systems. The **Purple Bankclimber** and the **Fat Three-ridged mussel** have both been collected from the Apalachicola River adjacent to the forest, with the former collected from the Ochlockonee River within the forest boundaries.

The mussels appear to have decreased because of habitat loss associated with reservoir construction, channel construction and maintenance, and erosion. They are intolerant of the still water in the lakes behind the dams. Populations of the shinyrayed pocketbook, Gulf moccasinshell, and purple bankclimber have been isolated due to major impoundments on the Apalachicola, Flint, and Ochlockonee rivers. Smaller impoundments on tributary streams in the region have resulted in further population isolation of some of the species. None of these mussels occur in the navigation channels of

the Chattahoochee or Flint rivers. The fat threeridge and the purple bankclimber occur in portions of the Apalachicola River that have a navigation channel.

Observations by Forest Service and US Fish ad Wildlife Service biologists during a July 20-22, 1993 field review indicated that the lower, unimpounded reaches of these rivers provided suitable refuge for the two mussels. The biologists felt that no Forest Service activities were adversely affecting these species. The revised Land and Resource Management Plan for the NFs in Florida directs that hardwood and cypress stands will not e managed for timber production. Consequently, river bottomland hardwoods will be retained with minimum disturbance.

The Florida-Caribbean Science Center of Biological Resources Division of the U.S. Geological Survey (USGS) in Gainesville, Florida surveyed for mussels in both the ACF (324 sites) and Ochlockonee (77 sites) river systems from 1991 to 1993.

The Forest is a source of free flowing, clean water flow into the Apalachicola and Ochlockonee Rivers. Silvicultural operations could exacerbate sedimentation if no buffer zones were left to avoid erosion and filter runoff. Road construction could cause similar problems. Current silvicultural activities following best management practices are compatible with the continued existence of the species. Forest Service management under the revised LRMP does not constitute a threat to these species. Forest plan Standard and Guide VG-8 (LRMP P.3-19) and WA-1 through WA-7 (LRPM, p.3-24 & 3-25) are expected to protect water draining from National Forest lands. Watershed impacts related to agriculture, urbanization, and water management outside National Forest lands will have the definitive impacts on these species.

Crustaceans

Sensitive
***Crangonyx hobbsi*/Hobb's Cave Amphipod**
***Procambarus attiguus*/Silver Glen Spring Cave Crayfish (added to list effective 01/01/2002)**
***Procambarus delicatus*/Big-cheeked Cave Crayfish**
***Procambarus orcinus*/Woodville Cave Crayfish**

Cave divers from the Woodville Karst Plain Project have documented **Hobb's Cave Amphipod** in the following sites in Leon and Wakulla Counties: Sullivan's Tunnel for the former and River Sinks, Shepard Blue Springs, Sally Ward Spring, and McBride Slough for the latter.

The **Silver Glen Spring Cave Crayfish** is endemic to Silver Glen Spring in Marion County in the Lake George District, Ocala National Forest.

The **Big-cheeked Cave Crayfish** is endemic to Alexander Spring in Lake County in the Seminole District.

The **Woodville Cave Crayfish** is found in limestone sinkholes and caves. It is known from 15 sites and is relatively common in the cave system in and around the eastern side of the Apalachicola National Forest. This system presently being explored by the Woodville Karst Plain Project, a local group of cave divers and scientists. The divers have documented this species in Leon and Wakulla Counties.

Cave crayfishes forage on detritus that enters through the open mouth(s) of the cave system. It is presumed that water quality in the cave system is important to their survival. Protection of natural detritus flow and prevention of chemical contamination are often cited as the most important protective measures. Based on observations of divers, the part of the cave systems originating under the National Forests appears to be relatively clean. Water flows originating on private lands apparently are sometimes contaminated by surface water runoff that flows directly into open sink holes.

Insects

Sensitive
***Atrytone arogos arogos*/Arogos skipper (added to sensitive list effective 01/01/2002)**
***Cordulegaster sayi*/Say's Dragonfly**
***Progomphus bellei*/Belle's Sand Clubtail**
***Somatochlora calvertii*/Calvert's Emerald**

The **Arogos skipper** occurs in much of the eastern US. It lives in a variety of grassland habitats with local distribution defined by the availability of food plants. The Arogos skipper is known from a sandhills site west of Lake Delancy in the Ocala National Forest, where the larval food plant is lopsided indiangrass (*Sorghastrum secundum*). This is the only xeric sandhill site known to be inhabited by the skipper, which occupies moist grasslands in other areas. The skipper has not been seen at the site for about 5 years. The species has not been confirmed in the Apalachicola or Osceola National Forests, but may occupy sandhills or flatwoods habitats there.

Say's Spiketail Dragonfly is associated with silt-bottomed spring seepages in hardwood forests, with nearby weedy clearings for foraging. It is known from 8 localities in northern Florida and 1 in central Georgia.

Belle's sand clubtail uses two habitat types, sand bottomed lakes and small sandy spring-fed trickles in the open. Their larvae burrow in the sand. Their range is apparently relatively small, including a few counties in the Florida panhandle.

Calvert's emerald, a metallic brown and green dragonfly is known only from the Florida Panhandle and a few specimens taken in South Carolina. Their habitat requirements are unknown. By analogy with similar species, it is assumed that the larvae probably live in boggy seepage trickles in hardwood forests.

1.7 Monitoring Question: Are we maintaining viable populations of PETS plant species and habitats to support them?

Item to Measure: Locations and numbers of PETS plant populations

Results and Evaluation

Endangered
Harperocallis flava/Harper's Beauty
Polygala lewtonii/Small Lewton's Milkwort
Nolina brittoniana/Britton's Beargrass

Threatened
Eriogonum longifolium var. *gnaphalifolium*/Scrub Buckwheat
Bonamia grandiflora/Florida Bonamia
Clitoria fragrans/Pigeonwings
Macbridea alba/White Birds-in-a-Nest
Scutellaria floridona/Florida skullcap
Pinguicula ionantha/Godfrey's Butterwort

Sensitive
Agalinis divaricata/Pinelands False Foxglove
Agrimonia incisa/Incised Groovebur
Andropogon arctatus/Pine-Woods Bluestem
Angelica dentata/Coastal-Plain Angelica
Aristida mohrii/Mohr's Threeawn

Aristida patula/Tall Threeawn
Aristida rhizomophora/Florida Threeawn
Aristida simplicifolia/Southern Threeawn
Arnoglossum diversifolium/Variable-leaf Indian-Plantain
Arnoglossum floridanum/Florida Indian-Plantain
Arnoglossum sulcatum Indian-Plantain
Asclepias curtissii/Curtis Milkweed
Asclepias viridula/Southern Milkweed
Aster chapmanii/Chapman's Aster
Aster eryngiifolius/Coyote Thistle Aster
Baptisia simplicifolia/Coastal Plain Wild Indigo
Berlandiera subacaulis/Florida Greeneyes
Boltonia apalachicolensis/Apalachicola Doll's Daisy
Calamintha ashei/Ashe's Savory
Calamintha dentata/Toothed Savory
Carex baltzellii/Baltzell's Sedge
Carex decomposita/Cypress-knee Sedge
Centrocema arenicola/Sand Butterfly Pea
Cleistes bifaria/Small Spreading Pogonia
Coelorachis tuberculosa/Piedmont Jointgrass
Coreopsis nudata/Georgia Tickseed
Ctenium floridanum/Florida Orange-Grass
Euphorbia discoidalis/Summer Spurge
Forestiera godfreyi/Godfrey’s Swamp Privet
Galactia microphylla/No Common Name
Gentiana pennelliana/Wiregrass Gentian
Hartwrightia floridana/Hartwrightia
Hasteola robertiorum/Hammockherb
Hymenocallis henryae/Panhandle Spiderlily
Hypericum chapmanii/A Saint John's-Wort
Hypericum exile/A Saint John's-Wort
Illicium parviflorum/Star-Anise
Justicia crassifolia/Thick-leaved Water Willow
Lachnoculon beyrichianum/Southern Bog Button
Lachnoculon digynum/Pineland Bog Button
Lachnoculon engleri/Engler’s Bog Button
Lechea cernua/Nodding Pinweed
Lechea divaricata/Drysand Pinweed
Linum westii/West’s Flax
Litsea aestivalis/Pondspice
Lupinus westianus/Gulf Coast Lupine
Lythrum curtissii/Curtiss' Loosestrife
Macranthera flammea/Hummingbird Flower
Magnolia ashei/Ashe's Magnolia
Matelea floridana/Florida milkvine
Matelea pubiflora/Trailing milkvine
Micranthemum glomeratum/Manatee Mudflower
Monotropsis odorata/Sweet Pinesap
Myriophyllum laxum/Piedmont Water-Milfoil
Najas filifolia/Needleleaf Waternymph
Nemastylis floridana/Fall-Flowering Ixia
Nolina atopocarpa/Florida Beargrass
Nyssa ursina/Bog Tupelo
Oxypolis ternata/Piedmont Cowbane
Parnassia caroliniana/Carolina Grass of Parnassus
Paronychia rugelii/Rugel’s Nailwort

Persea humilis/Scrub Bay
Phlox floridana/Florida Phlox
Phoebanthus tenuifolia/Pineland False Sunflower
Physalis arenicola/Cypresshead Groundcherry
Physalis carpenterii/Carpenter's Groundcherry
Physostegia godfreyi/Apalachicola Dragonhead
Pieris phillyreifolia/Climbing Fetterbush
Pinckneya bracteata/Fevertree
Pinguicula ionantha/Godfrey's Butterwort
Pinguicula planifolia/Chapman's Butterwort
Pityopsis flexuosa/Bent Golden Aster
Pityopsis oligantha/Coastal-Plain Golden-Aster
Plantago sparsiflora/Pineland Plantain
Platanthera integra/Yellow Fringeless Orchid
Polygala hookeri/Hooker's Milkwort
Polygala leptostachys/Georgia Milkwort
Polygonella macrophylla/Largeleaf Jointweed
Pteroglossaspis (= Eulophia) ecristata/Wild Coco
Pycnanthemum floridanum/Florida Mountainmint
Quercus arkansana/Arkansas Oak
Rhexia parviflora/Small-Flowered Meadow Beauty
Rhexia salicifolia/Panhandle Meadow Beauty
Rhododendron austrinum/Orange Azalea
Rhynchosia michauxii/Michaux's Snoutbean
Rhynchospora breviseta/Shortbristle Beaksedge
Rhynchospora crinipes/Hairy-peduncled Beakrush
Rhynchospora macra/Large Beakrush
Rhynchospora pleiantha/Coastal Beaksedge
Rudbeckia graminifolia/Grassleaf Coneflower
Rudbeckia nitida/Shiny Coneflower
Ruellia noctifolia/White-Flowered Wild Petunia
Salix floridana/Florida Willow
Sarracenia leucophylla/Crimson Pitcherplant
Schisandra glabra/Bay Starvine
Schoenocaulon dubium/Florida Feathershank
Schoenolirion albiflorum/White Sunnybells
Scutellaria floridana/Florida Skullcap
Scutellaria glabriuscula/Georgia Skullcap
Sideroxylon alachuense/Silver Buckthorn
Sideroxylon tenax/Tough Bumelia
Silphium simpsonii/Simpson's Rosinweed
Sisyrinchium xerophyllum/Jeweled Blue-eyed Grass
Spigelia loganiodes/Florida Pinkroot
Spiranthes longilabris/Giant Spiral Ladies'-tresses
Sporobolus curtissii/Pineland Dropseed
Sporobolus floridanus/Florida Dropseed
Sorghastrum apalachicolense/Apalachicola Indiangrass
Sporobolus floridanus/Florida Dropseed
Stachydeoma graveolens/Mock Pennyroyal
Stylisma abdita/Showy Dawnflower
Tephrosia mohrii/Pineland Hoary-Pea
Verbesina chapmanii/Chapman's Crownbeard
Verbesina heterophylla/Diverseleaf Crownbeard
Vicia ocalensis/Ocala Vetch
Warea sessilifolia/Sessile-Leaved Warea
Xyris chapmanii/Chapman's Yellow-eyed Grass

Xyris drummondii/Drummond's Yellow-eyed Grass
Xyris isoetifolia/Quillwort Yellow-eyed Grass
Xyris longisepala/Karst Pond Xyris
Xyris louisianica/Kral's Yellow-eyed Grass
Xyris scabrifolia/Harper's Yellow-eyed Grass
Zephyranthes simpsonii/Redmargin Zephyrlily

Proposed, Threatened and Endangered (PETS) species which are also Management Indicator Species (MIS), are discussed under monitoring question 1.1.

Many of the PETS plants on the National Forests in Florida are rare endemics and have become even more rare due to loss of habitat. Others were once more widely distributed, but have become rare due to loss of habitat. The habitat of most of these species depends upon frequent fire. Habitat loss has resulted from a combination of fire exclusion, mechanical disturbance, and conversion to pine plantations.

Considering the reasons for loss of habitat, one of the most reliable ways to track population viability is by monitoring those activities that affect habitat. Such activities include acres maintained/restored by burning, acres restored by thinning, and acres restored to longleaf, verses acres degraded by mechanical disturbance. These are monitoring items reported elsewhere in this report.

In addition to monitoring habitat, the monitoring of plots established within known populations and field surveys to detect previously unknown and/or new occurrences should provide direct evidence of population viability.

Permanent monitoring plots have been established for seven of the T & E plants known to occur on the National Forests in Florida. A field survey on the Ocala is needed to establish the distribution of *Clitoria fragrans*. To date, only two individuals of *C. fragrans* have been observed on the Ocala.

The Ocala National Forest was surveyed in the early 1990's to establish the distribution of *Bonamia grandiflora*, *Polygala lewtonii*, and *Eriogonum longifolium*. *Clitoria fragrans* and *Nolina brittoniana* were subsequently discovered on the Ocala. The Apalachicola National Forest routinely conducts surveys following fire to determine the distribution of *Harperocallis flava*, *Macbridea alba*, *Pinguicula ionantha*, and *Scutellaria floridana*. In order to make this data more readily available, the Apalachicola National Forest is entering this distribution data on GIS.

Most of the Sensitive plants known or likely to occur on the National Forest in Florida are fire dependant components of wiregrass communities. A few are components of the scrub communities. These species require similar habitat to the T & E plants associated with these respective communities. Therefore, it is reasonable to assume that those activities that maintain or improve habitat for these listed T & E Plants will also serve to provide habitat for those sensitive plants that occupy similar habitat.

A few sensitive plants are associated with canopied wetlands and mesic hardwood forests. These areas are not considered suitable for timber production and are not significantly affected by Forest Service management activities.

The Forest Service is continuing to gather data on the distribution of PETS plants through field surveys associated with management activities. Contracts with the Florida Natural Areas Inventory and the Department of Defense Legacy Program are being finalized under which additional PETS plants surveys will be conducted and additional monitoring plots will be established.

Inventories conducted through field surveys provide good information concerning the distribution of PETS plants on the Forest. Revisiting know occurrences provides qualitative information as to whether these species are persisting.

Years of monitoring are required to establish population trends. Monitoring plots established in 1996 to monitor T & E plants have not been in place long enough to establish population trends. In most cases, three plots were established to monitor each species. Three plots are insufficient to provide reliable trend data.

The monitoring plots established in 1996 were part of a larger ecosystem classification project entered into with the University of Florida. Permanent vegetation monitoring plots were established on all five Ranger Districts. Data was to be taken from these plots on soils and vegetation. Beginning in 1997, 101 Land Type Association (LTA) plots were established on the ANF, 50 on the Apalachicola Ranger District (ARD) and 51 on the Wakulla Ranger District (WRD).

In 2000, those plots with recorded occurrences of MIS plants were identified and the decision was made to use data obtained from these LTA plots to track MIS species trends also. To date, five of the above listed MIS species have been documented on 43 of the 50 plots on the ARD (*Aristida beyrichiana, Ctenium aromaticum, Sporobolus floridanus, Sporobolus junceus* and *Xyris stricta)*. Four of the above listed MIS species have been documented on 30 of the 51 plots on the Wakulla District (*Aristida beyrichiana, Ctenium aromaticum, Sporobolus floridanus,* and *Sporobolus junceus)*. Meaningful trend information is not yet available since these plots have been sampled only once. In addition to these LTA plots, twelve plots (three per species) were established for the federally listed MIS plants *Harperocallis flava, Macbridea alba*, *Pinguicula ionantha,* and *Scutellaria floridana.* Initial data has been collected from all of these plots and they have been revisited anywhere from 2-5 times each. Trend data is not available as of yet. Baseline data for all MIS species can be found in the *2001 Annual Monitoring and Evaluation Report for the National Forests in Florida*.

The LTA plots were intentionally placed on sites selected because they were thought to closely represent the potential natural vegetation of their respective communities. In order to track the success of efforts to improve or restore the natural native communities on degraded sites, plans are to establish similar monitoring plots on pine plantations and other degraded sites. The National Forests in Florida have an agreement with Florida Natural Areas Inventory (FNAI) to establish these additional MIS plots starting in 2003 and to perform forest wide surveys for MIS, T & E, and Forest Sensitive Plants. This is anticipated to be a three-year contract.

Species not addressed under Management Indicator Section

Pigeon wings (Clitoria fragrans)

Results: *C. fragrans* was reported on the Lake George Ranger District of the Ocala National Forest in 1999, however, after several visits to the site, it was not able to be confirmed. No surveys have been conducted and no monitoring has been accomplished to date.

Evaluation: *C. fragrans* is a component of scrub and longleaf pine sandhill communities. Known distribution includes Highlands, Polk, Lake, Osceola, and now Marion Counties. It has been found to persist for up to thirty years without fire, but flowering and fruiting most often follows fire. It appears that fire suppression and shading from a dense overstory suppresses vegetative vigor and reproduction. A relatively frequent fire return interval is considered to be crucial to the persistence of this species.

Scrub Beargrass *(Nolina brittoniana)*

Results: N. brittoniana is a member of the agave (Agavaceae) family. There is one known occurrence of *N. brittoniana* on the Ocala National Forest. This was discovered in 2001 on the Seminole Ranger District of the Ocala National Forest, in Marion County. The known distribution includes Marion, Hernando, Lake, Osceola, Orange, Highlands, and Polk Counties. *N. brittoniana* is clonal, reproducing vegetatively by forming new rosettes at the end of short rhizomes. In most cases, it is

dioecious, producing male and female flowers on separate plants. N. brittoniana is a component of scrub and highpine communities, however it has been reported to occur in hammocks.

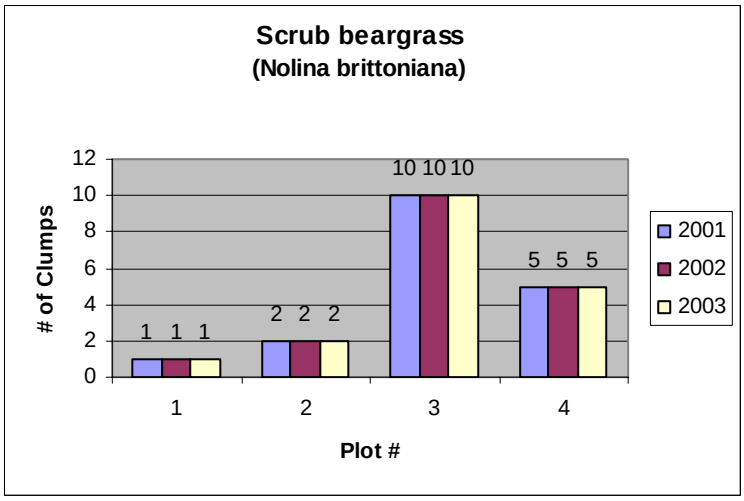


Figure 13. Ecosystem Plot Data for Scrub Beargrass Number of Clumps/Plot

<u>Evaluation</u>: *N. brittoniana* is a fire tolerant (or perhaps fire dependant) species. Fire suppression, real estate development, and forestry practices have dramatically reduced the density of this endemic plant throughout its range (Kral, 1983). The greatest threats to the population on the National Forest are silvicultural practices, off-road vehicles, and fire suppression activities, including the direct effects of constructing firelines to suppress lightning ignited or other non-prescribed fires. VG18 of the forest plan provides some protection from mechanical disturbance associated with silvicultural practices; however, continued use of herbicides in what are sometimes called "longleaf restoration projects" continues to threaten plant diversity.

Forest Plan Goal:

- Apply prescribed burning technology as a primary tool for restoring fire's historic role in ecosystems.

Forest Plan Objective:

- Prescribe burn on average every 3 years with varied intervals on any given site to restore natural processes in all sites where the natural-fire-return interval was less than 10 years. Strive to burn 50 percent of those acres between March 15 and September 30 and 20 percent between May 1 and July 31. This includes wilderness, wilderness study areas, and the Savannah research natural area.

1.8 <u>Monitoring Questions</u>: What is the burning interval of upland pine acres? In what months have upland pine been burned?

<u>Items to Measure</u>: Acres of upland pine burned. Acres burned by month.

<u>Results</u>: Total Acres burned on the National Forests in Florida in the last 3 years are shown in Table 30.

Table 30.
Acres Burned

Year	Acres
2001	107,717
2002	141,109
2003	190,090
Total	438,916

Based on the upland pine Management Area 7.1 acres of 507,740, 86% longleaf type was burned in the last 3 years.

Table 31 provides the breakdown of acres burned by month in FY2003.

Table 31.
Upland Pine Percent Burned by Month
FY 2002

Month	Percent
October	2.4
November	13.0
December	7.7
January	18.5
February	9.5
March	2.3
April	12.5
May	1.9
June	10.7
July	15.2
August	0
September	6.3
Total	100

Evaluation: An average of 150,000 acres every 3 years should be burned to maintain the upland pines. The Forest should strive to burn 50% of those acres (75,000 acres) between March 15 and September 30, and 20% (30,000 acres) between May 1 and July 31.

FY 2003 saw a record year for prescribed fire accomplishments. All the above criteria were met except average yearly acres. Average yearly acres were 146,305.

Forest Plan Standards and Guidelines for Fire are found on pages 3-3 through 3-4 of the Forest Plan and Include standards **FI-1** through **FI-14.**

1.9 Monitoring Question: How many miles of firelines were plowed for prescribed fire and wildfires? How many miles were restored?

Item to Measure: Miles of plowed firelines for each purpose. Miles of plowed firelines restored.

Results: A total of 222 miles of re-worked (plowed,bladed,disked) prescribed fire firelines were installed during FY2003. Four miles of new lines were plowed for prescribed fire. Wildfire generated 8 miles of firelines.

During FY2003, 8 miles of plowed firelines were restored.

Alternative Firelines (swamp, foam, water, existing roads, disked lines): Alternative firelines utilized for prescribed fire totaled 798 miles. Alternative firelines utilized for wildfires totaled 5 miles .

Evaluation: FY 2003 saw a record year for prescribed fire accomplishments and based on the numbers above emphasis is being placed on reducing plowlines. The miles of fireline generated by wildfire reflects a very low occurrence of wildfires for 2003.

Forest Plan Objective:

- Prescribe burn on average every 3 years with varied intervals on any given site to restore natural processes in all sites where the natural-fire-return interval was less than 10 years. Strive to burn 50 percent of those acres between March 15 and September 30 and 20 percent between May 1 and July 31. This includes wilderness, wilderness study areas, and the Savannah research natural area.

Based on the upland pine Management Area 7.1 acres of 507,740, 86% of this type was burned in the last 3 years (2001,2002,2003). However, in FY 2003, 190,090 acres were burned; 36 percent of these acres were burned in the winter months, 47 percent of these acres were burned between March 15 and September 30, and 52,998 acres were burned between May 1 and July 31.

Forest Plan Standards and Guideline FI-7—Minimize the use of plowed firelines for prescribed burns. Favor the use of alternatives such as disked firelines, foam, water, existing roads, or natural barriers.

A total of 222 miles of re-worked firelines were installed during FY2003. Four miles of new firelines were plowed for prescribed fire. Wildfire generated 8 miles of firelines.

Forest Plan Objective:

- Restore between 10,000 and 15,000 acres of off-site slash pine to the appropriate native vegetation in the next 10 years. Remove slash pine from 8,000 acres of mixed longleaf/slash pine stands on the Osceola NF. The long-term objective is to restore all the off-site slash pine to the appropriate native vegetation.

1.10 Monitoring Question: How much off-site slash pine has been restored to other types?

Item to Measure: Acres type-converted from slash pine to other spp.

Results: 1108 acres have been restored to longleaf pine from off-site slash pine through the end of FY 2003. No slash pine was removed from mixed stands on the Osceola in FY 2003.

Evaluation: . In order to meet the 10-year objective, efforts should be made to increase the acreage of restoration in future years. More effort should be made to schedule removal of slash pine from mixed stands on the Osceola National Forest.

1.11 Monitoring Question: Are we collecting data on understory structure?

Item to Measure: CISC report data on understory field

Results: 82% of the 500, 600 and 700 series land classes in the CISC data have understory codes assigned. These land classes represent acreage suitable for timber management and are the only classes of land that receive a formal silvicultural examination. CISC is updated to the results of the silvicultural examinations. Other land classification acreage may be examined and CISC data updated by other resource areas as their needs dictate.

Evaluation: The CISC database will be replaced by the FSVeg database, which should allow for collection and storage of more detailed understory vegetation information. The purpose of this monitoring item is to ensure that data is collected in order to provide information for the next Plan

revision. This monitoring question is more appropriate as an administrative action and not as a Forest Plan monitoring item.

Forest Plan Objective:

- Thin 45,000 to 55,000 acres of longleaf and slash pine stands to release overcrowded live crowns, favor appropriate pine species for regeneration, increase stand growth, allow more sunlight onto the forest floor, and increase suitable habitat for red-cockaded woodpeckers (RCWs).

1.12 Monitoring Question: How many acres have been offered for thinning?

Item to Measure: Number acres thinning harvest offered

Results: Through FY 2003, 3,916 acres were offered for thinning purposes.

Evaluation: In order to meet the Forest Plan objective, efforts should be made to increase the acreage offered for thinning.

Forest Plan Objective:

- Replace between 500 and 1,000 acres of the off-site sand pine to the appropriate native vegetation in the next 10 years. The long-term objective is to restore the off-site sand pine to the appropriate native vegetation.

1.13 Monitoring Question: How much off-site sand pine has been restored, and to what other types?

Item to Measure: Acres type-converted from off-site sand pine to other species

Results: : A total of 314 acres of off-site sand pine have been restored to longleaf pine through FY 2003.

Evaluation: The results from the first three full years of plan implementation indicate that the objective for the plan period will be met.

Forest Plan Objective:

- Initiate uneven-aged management with group selection harvests on 30,000 to 33,000 acres principally in longleaf pine forests with some in slash pine forests.

1.14 Monitoring Questions: On how many acres have we initiated uneven-aged management harvest? Is the group selection method producing the anticipated desired conditions in the longleaf pine ecosystem and what are the effects of group selection harvest in longleaf pine?

Items to Measure: Number acres offered with uneven-aged harvest. Tree stem diameter and frequency, frequency of seed crops, longleaf pine regeneration establishment and survival, growth, and development of seedlings, pine midstory development and distribution, costs and returns of implementation of harvesting, costs and effects of burning within harvest units, plant species

frequency and distribution, PETS species population trends/habitat conditions, MIS plant/animal population trends/habitat conditions.

Results: Through FY 2003, 1,801 acres have been offered with uneven-aged management harvest methods. An evaluation of the effects of this harvest method is to be reported in five-year intervals. There were not any studies initiated in FY 2003; however, the requirements for this are known and recognized. Areas that may be suitable for this work are being surveyed, examined, and assessed for inclusion in future years work scheduling.

Evaluation: In order to meet the objectives of the Forest Plan, efforts should be made to increase the acreage offered for uneven-aged harvest. More detail can be found concerning the effects of group selection under Research Needs in part III of this report.

Forest Plan Objective:

- Initiate irregular shelterwood harvests on between 1,800 and 2,000 acres of slash pine forests.

1.15 Monitoring Questions: How many acres have we initiated irregular shelterwood harvest? Is the irregular shelterwood method producing the anticipated desired conditions in the slash pine forest?

Items to Measure: Number acres offered with irregular shelterwood harvests. Growth and development of seedlings, costs and returns of implementation of harvesting, costs and effects of burning within harvest units, plant species frequency and distribution, PETS species effects/population trends.

Results: There were no acres of irregular shelterwood offered for harvest for FY 2003. An evaluation of the effects of this harvest method is to be reported in five-year intervals. There were no studies initiated in FY 2003; however, the requirements for this are known and recognized. In order to meet the objectives of the Forest Plan areas that may be suitable for this work are being surveyed, examined, and assessed for inclusion in future years work scheduling.

Evaluation: There should be an effort to schedule areas for harvest using this method in the future.

Forest Plan Objective:

- Regenerate between 39,000 and 41,000 acres of sand pine on the Ocala NF.

1.16 Monitoring Question: How many acres of sand pine have had a regeneration harvest?

Item to Measure: Number acres offered with sand pine regeneration harvest

Results: There were 7,749 acres of sand pine committed to regeneration harvest through the end of FY 2003. 2,456 acres of sand pine were offered for regeneration harvest in FY 2003.

Evaluation: In order to meet the 10-year Plan objective, efforts should be made to increase the acreage committed to sand pine regeneration.

Forest Plan Standards and Guidelines for size and distribution of sand pine openings are found on pages 4-45, 4-47, & 4-48 and includes standards and guidelines **8.1-3, 8.2-3 and 8.4-3.**

1.17 Monitoring Question: What is the size and distribution of openings in sand pine?

Item to Measure: Size of opening

Results: The average size of sand pine openings in ages 3-15 years in FY 2003 is 53 acres. The average size of openings created since 2000 has increased to 69 acres.

Evaluation: The Forest Plan desired condition of sand pine scrub openings is to have large openings up to 160 acres in most of the forest and up to 320 acres in portions of the forest. While some large openings have been created, the average size of acres committed to regeneration in FY 2003 is smaller than desired. The purpose of increasing the size of opening is to maximize scrub-jay occupancy. While the regeneration areas are smaller than desired, they are now allowed to be placed adjacent to scrub-jay habitat. Figure 15 shows the distribution of scrub-jay habitat on the Ocala National Forest.

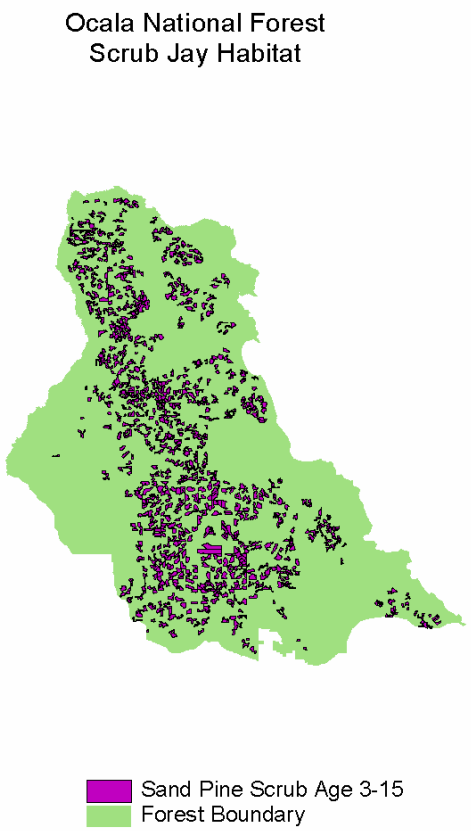


Figure 14. Distribution of Scrub Jay Openings – Ocala NF

Forest Plan Objective:

- Designate the following acres of future old growth by community type (Table 30):

Table 32.
Old-Growth Community Objectives

Old-Growth Community	Acres
Upland Longleaf Pine Forest	10,200
Southern Wet Pine Forest, Woodland, and Savannah	11,000
Cypress/Tupelo Swamp Forest	17,700
River Floodplain Hardwood Forest	2,900
Hardwood Wetland Forest	24,200
Dry and Dry Mesic Oak/Pine Forest	2,200
Coastal Plain Upland Mesic Hardwood Forest	1,700
Dry and Xeric Oak Forest, Woodland, and Savannah	2,100

1.18 Monitoring Question: Have old-growth stands been designated in each community type?

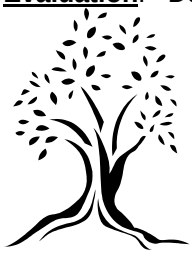
Item to Measure: Acres of old growth by community type designated in CISC

Results: The following acres of old-growth has been designated in CISC.

Table 33.
Old-Growth Designations

Old-Growth Community	Acres Designated
Upland Longleaf Pine Forest	7,951
Southern Wet Pine Forest, Woodland, and Savannah	9,944
Cypress/Tupelo Swamp Forest	7,630
River Floodplain Hardwood Forest	2,114
Hardwood Wetland Forest	16,408
Dry and Dry Mesic Oak/Pine Forest	2,064
Coastal Plain Upland Mesic Hardwood Forest	830
Dry and Xeric Oak Forest, Woodland, and Savannah	1,314

Evaluation: Designation of old-growth is on schedule with 67% of the old-growth objective attained.



Forest Plan Goals:

- Obtain a national forest ownership pattern that reduces management costs and helps meet ecosystem management objectives. Acquire land to connect large tracts of public ownership to maintain biologic and hydrologic linkages in partnerships with other public agencies. Locate and maintain national forest boundaries that are visible to forest users and neighbors.

Forest Plan Objectives:

- Evaluate Choctawhatchee lands that no longer exhibit national forest character and consider for exchange for lands adjacent to or within the Apalachicola, Ocala, and Osceola National Forests. Exchange national forest land along the Ocklawaha River for State-owned land within national forest boundaries. Exchange Forest Service-owned minerals under Withlachoochee and Blackwater State Forests for land within Pinhook purchase unit.

- Acquire land within the 170,600-acre Pinhook purchase unit. Within the Apalachicola, Ocala, and Osceola National Forests, annually acquire a minimum of 200 acres of forest inholdings. Acquire 6,500 acres adjacent to the Ocala NF.

1.19 Monitoring Question: Have land purchases and exchanges met the objectives established in the Forest Plan?

Item to Measure: Itemized by map what has been gained and what has been exchanged; miles of landlines maintained

Results: There were 30.42 miles of boundary lines marked/maintained of National Forest System lands in Florida in FY 2003. New lines were established through purchase that were not marked and posted to standard due to limited funding and staffing.

In FY 2003, a total of 1,597 acres were acquired through multiple transactions within the Florida National Scenic Trail acquisition corridor and the Pinhook Swamp Purchase Unit. In addition, a 6.15 acre exchange was finalized on the Ocala National Forest, and a .5-acre right-of-way donation was processed on the Apalachicola National Forest.

On December 3, 2003, the Florida National Forests Land Management Act was passed by Congress authorizing the Forest Service to sell or exchange 17 identified tracts in Florida. Proceeds from these sales/exchanges will be utilized to acquire lands adjacent to or within the Apalachicola, Osceola, Ocala National Forests, or lands within the Pinhook Swamp Purchase Unit or the Florida National Scenic Trail Corridor.

Evaluation: These newly acquired lands, particularly those pertaining to the Florida National Scenic Trail, will need to be addressed within the Forest Plan. Constraints on funding continue to impede our ability to fully meet our potential and expectations within the program.

Forest Plan Standards and Guidelines for soil and water are found on pages 3-24 through 3-25 of the Forest Plan and include standards and guidelines **WA-1** through **WA-7.**

1.20 Monitoring Questions: Are aquatic and terrestrial ecosystems being impaired by acid deposition? Is water quality being maintained?

Items to Measure: Change in water chemistry regarding acid neutralization. Fecal coliform – swim sites; drinking water – recreation areas and administrative sites; chemistry – State well sites

Results: Results of the National Stream Survey by the U.S. Environmental Protection Agency, 1988, found Florida to have a relatively high percentage of acid, low pH, low acid neutralizing capacity streams. Although streams and lakes in Florida are known to be acid naturally, concerns exist over the added impact acid deposition may have on these already acid systems. For these reasons two studies were initiated in FY2000 to address impacts that acid deposition may be having on the aquatic and terrestrial ecosystems. The first study involves a look at chrysophyte populations in thirty lakes on the Ocala N.F. Chrysophyte samples were collected from vegetation surfaces, bottom sediments and water at each of the thirty lakes. Chrysophyte distributions for these samples were correlated with lake water chemistry, including acidity and pH, to develop statistical relationships between water chemistry and chrysophyte distributions. Chrysophyte population changes over time will also be determined for several lakes. Bottom sediment core samples will be divided into thin layers and chrysophyte distributions determined for each layer. Changes in chrysophyte population distributions can then be used to predict changes in water chemistry over the same time period.

The second study was a cooperative effort with Florida A & M University and the Forest Service. This study looked at the fate of sulfates from acidic atmospheric deposition in the poorly buffered soils of Bradwell Bay Wilderness on the Apalachicola NF. Results are reported in the final report submitted in 2002 to the Forest Service. Findings confirmed the three soils present in Bradwell Bay Wilderness – Leon, Rutlege, and Croatan, are strongly acid with pH values ranging from 2.9 to 4.6 and have no acid neutralizing capacity. Due to the very acidic nature of these soils, the effects of acid precipitation on the biology have to be evaluated through further study of the effects of Al and Ca in the system.

Fecal coliform samples are collected at all developed swim sites during the summer swimming season on all three national forests. All swim sites monitored in 2003 met state standards for fecal coliform levels except for Ocean Pond which failed one time. The follow up sample for Ocean Pond passed. Swimming areas sampled for fecal bacteria on the Ocala NF are as follows: Mill Dam Lake, Fore Lake, Juniper Springs, Silver Glen Springs, Salt Springs, Alexander Springs, Clearwater Lake, Farles Prairie, Buck Lake, Wild Cat Lake, Lake Dorr, Doe Lake. The highest readings obtained on the Ocala NF for 2003 were: Juniper Springs 95 & 150 in June, and Dorr Lake 140 in August. Everything else had coliform counts of less than 100. Ocean Pond is the only swim site on the Osceola NF. Lost Lake on the Apalachicola NF, which had been maintained in the past as a developed swimming area, was closed to swimming again this year. Due to the small size of the lake and a tendency to fail the test for fecal coliform, it is not expected that Lost Lake will be maintained in the future as a swimming site. The only swim sites on the Apalachicola NF are Silver Lake, Camel Lake, and Wright Lake. All these swim sites met state standards for swim beach monitoring throughout 2003.

Drinking water samples from recreation areas and administrative sites are sampled monthly for total coliform and yearly for nitrate levels. All sites monitored on the Apalachicola and Osceola NF passed all tests for potable waters in 2003. Tests on the Osceola NF included an inspection by Florida Department of Environmental Protection. The water system at Juniper Springs on the Ocala NF failed on January 2, 2003, but all follow up tests passed. Several hand pumps at less developed recreation sites failed as follows: Shanty Pond, 1/10/03; Hopkins Prairie, 9/7/03 & 9/9/03; and Lake Eaton, 9/9/03. All hand pumps were treated with chlorine and after testing negative for four follow up tests, were restored to use. Two additional follow up tests were then taken in the following quarter. Although nitrate levels are rising in many areas across the state, samples tested on the National Forests in Florida continue to be at normal historic levels. This is likely due to the lack of development within aquifer recharge areas for Forest springs and ground waters. Nitrate levels for ground waters across the three forests are determined from water sampling at both potable well sites and state ambient ground water monitoring sites. The Florida State standard for nitrate is 10 mg/l N. All potable and ground waters tested are below this limit.

Florida Springs Task Force has begun monitoring all first magnitude springs as part of the Governor's initiative to protect and preserve Florida's springs. Both chemical and biological monitoring is being done on first magnitude springs on the Ocala N.F. These data will add to the information describing the health and condition of the ground water system supplying springs across Florida. Results are to be published in 2004.

Many springs systems in Florida have recently experienced an increase in the amount of algae present in both the boils and spring runs. Although algae are normally found in these systems, the amount present has been increasing and is an issue of concern for many. Florida Department of Environmental Protection in cooperation with Michigan State University has begun a study of the springs in Florida to determine: 1.) nutrient and algal conditions, 2.) the relationships between nutrients and algae; and 3.) monitoring and management tools to protect and restore the springs. Results will be reported following publication of study results in 2004.

Evaluation: Results of the water quality studies utilizing chrysophyte samples initiated in FY 2000 and continuing in FY 2003 will be evaluated when complete. Water quality at swim sites appears to be improving, possibly as a result of a return to more normal precipitation patterns. However, swim site failures have historically been attributed to contamination by swimmers, especially during high use days. This sampling can be very dependent on where and when samples are collected, especially during times when waters are warm and still or when large numbers of swimmers are present.

Forest Plan Standards and Guidelines for air quality are found on page 3-25 of the Forest Plan and include standards and guidelines **WA-8** and **WA-9**.

1.21 Monitoring Question: Is air quality being maintained?

Item to Measure: Particulates, Ozone

Results: The Clean Air Act Amendments charge the NFs in FL with maintaining and improving air quality at the Bradwell Bay Class I wilderness area on the Appalachicola NF. Additionally, the NFs in FL are concerned with air quality for all NF lands, both from sources off of NF lands and from sources internal to the NFs. The primary source of FS generated emissions is the Forest's prescribed fire program.

Unlike most NF activities that are of concern to NF lands only, a discussion of air quality must include a consideration of surrounding lands. For purposes of this narrative, air quality information is considered for the entirety of counties where the NFs are located, as well as adjacent counties as well. It is necessary to include adjacent counties to get a more comprehensive look at air quality near NF lands. Similarly, whatever air emissions result from Forest management activities will disperse and transport to neighboring counties.

Ambient Air monitoring Information: The two air quality parameters holding most interest for Forest managers are ozone and fine particulate matter. The Florida Department of Environmental Protection (FDEP) operates a network of air quality monitors state-wide, both for fine particulate matter ($PM_{2.5}$) and ozone. Air quality monitoring for particulate matter includes both fine and coarse particulates, although from a human health stand-point, fine particulates are of the most concern. The state-wide monitoring network is not distributed uniformly across the State, most monitors are concentrated near urban areas.

National Ambient Air Quality Standards (NAAQS) No part of the State of Florida currently fails to attain the NAAQS. While standards are provided under NAAQS for the six common air pollutants, only two are relevant to Forest management activities: particulate matter and ozone. Within the southeastern U.S., current, and forthcoming, non-attainment areas result from ozone and fine particulate pollution.

Fine Particulate Matter: Attainment of the $PM_{2.5}$ particulate standard (for airborne particulates with diameters less than or equal to 2.5 microns) requires that: the 98th percentile of the distribution of the 24-hour concentrations for a period of 1 year, averaged over 3 years, not exceed 65 ug/m3. Additionally, the three-year average of the annual arithmetic mean of the 24-hour concentrations must not exceed 15.0 ug/m3. $PM_{2.5}$ particles remain suspended in the air much longer (on average) than coarse (PM_{10}) particles and behave more like a regional pollutant such as ozone.

Air quality statistics representing the vast majority of all days monitored State-wide show rural-forested settings tend to be the cleaner than urban/residential sites. The following table analyzes fine particulate monitoring data for three years to assess trends. The table lists the annual arithmetic means for each year, the annual EPA standard is 15 micro-grams per cubic meter. Monitoring locations reporting fine particulate concentrations higher than 15 are considered unhealthy and not meeting national standards. A review of all of the counties reported below indicates a probable positive trend in fine particulate concentrations from 2001 to 2003. No counties with NF lands or near NFs are in danger of exceeding the fine particulate standard. This is important considering the fact that the NFs in FL accomplished 190,090 acres of prescribed fire in 2003. Prescribed fires have relatively short durations, but can produce significant quantities of fine particulates.

Table 34. Air Quality statistics.

Appalachicola NF, Counties with $PM_{2.5}$ Monitors	Co. Adjacent To Natl. Forest Lands w/Monitors	**2003** $PM_{2.5}$ Data Arith. Mean. Annual Standard	**2002** $PM_{2.5}$ Data Arith. Mean. Annual Standard	**2001** $PM_{2.5}$ Data Arith. Mean. Annual Standard
Leon (urban)	---	12.7	12.9	12.3
Osceola NF, Counties with $PM_{2.5}$ Monitors				
---	Alachua (urban)	9.7	9.9	10.4
---	Duval (urban)	9.8	10.2	10.7
Ocala NF, Counties with $PM_{2.5}$ Monitors				
Marion (urban)	---	9.3	9.8	10.3
---	Alachua (urban)	9.7	9.9	10.4
---	Citrus (urban)	8.7	8.6	9.7
---	Orange (urban)	9.4	9.7	10.7
---	Seminole (rural)	8.6	8.9	9.7
---	Volusia (urban)	8.5	8.8	10.0

No State of FL $PM_{2.5}$ monitors in these counties with NF lands: Franklin, Liberty, Baker, Columbia, Lake, Wakulla, nor Putnam.
NAAQS for $PM_{2.5}$ – 15 micro-grams per cubic meter, 3-year average of the annual arithmetic mean.
$PM_{2.5}$ air quality monitors – owned and operated by the State of Florida, in conjunction with the USEPA.
Rural/urban – refers to the general location of the monitor.
Data source - http://www.epa.gov/air/data/index.html

Ozone*:* The ozone standard is based on an 8-hour running average. Attainment requires that the 3-year average of each year's 4th highest daily maximum 8-hour average concentration not exceed 0.08 parts per million (ppm). Briefly, that means that 8-hour averages above 0.08 ppm are unhealthy for humans and vegetation alike. Like fine particulate matter, ozone monitoring data reported below is primarily from urban/residentially located monitors. One of the few rural monitors is located at the Osceola Work Center.

A casual observer might predict higher ozone concentrations in urban areas as compared to rural settings, but the data presented below show no apparent correlation between urban and rural sites. The highest reported ozone concentrations from 2001- 2003 were reported at a rural site (Wakulla County), that monitor is located within the St. Marks National Wildlife Refuge. No apparent annual trends are apparent from the trailing data.

One explanation for the lack of clear patterns in the data is that ozone is not a primary air pollutant. It is a secondary pollutant, formed many miles downwind of sources from precursor pollutants (nitrogen oxides and volatile organic compounds) that react in the presence of high air temperatures and sunlight to form ozone.

Table 35. Ozone Data

Appalachicola NF, Counties with Ozone Monitors	Co. Adjacent To Natl. Forest Lands w/Monitors	**2003** Ozone Data, Highest Daily Max. 8-hour Standard	**2002** Ozone Data, 4th Highest Daily Maximum	**2001** Ozone Data, 4th Highest Daily Maximum
Leon (urban)	---	0.071	0.071	0.074
Walkulla (rural)	---	0.082*	0.071	0.081*
Osceola NF, Counties with Ozone Monitors				
Baker (rural)	---	0.074	0.069	0.072
Columbia (rural)	---	0.073	0.068	0.072
---	Alachua (urban)	0.073	0.071	0.076
---	Duval (urban)	0.079	0.065	0.072
Ocala NF, Counties with Ozone Monitors				
Marion (urban)	---	0.075	0.076	0.074
Lake (urban)	---	0.079	0.074	0.075
---	Alachua (urban)	0.073	0.071	0.076
---	Orange (urban)	0.074	0.076	0.078
---	Seminole (rural)	0.076	0.078	0.078
---	Volusia (urban)	0.071	0.069	0.073

No State of FL ozone monitors in these counties with National Forest lands: Franklin, Liberty, and Putnam.
NAAQS for Ozone – 0.08 parts per million, three-year average of the 4th highest maximum 8-hour average.
Ozone air quality monitors – owned and operated by the State of Florida, in conjunction with the USEPA.
Rural/urban – refers to the general location of the ozone monitor.
*- counties exceeding the Standard for one year, but not for the average of a three-year period.
Data source - http://www.epa.gov/air/data/index.html

In summary, by comparing information in the two above tables, it appears that there has been some change in the overall quality of air passing over and near the Forest for the 2003 monitoring period – an improvement for $PM_{2.5}$ with minimal to no change for ozone. None of the monitoring data presented above indicate a situation where violation of air quality standards is imminent within or near the Forest.

Acid Deposition. The National Atmospheric Deposition Program (NADP) and the Clean Air Status and Trends Network (CASTNET) cooperate to monitor wet and dry forms of acidic deposition throughout the country. NADP operates 13 sites within or near Florida that allow them to draw isopleth/contour maps of wet deposition of acid anion pollutants (sulfate and nitrate) for the state (http://nadp.sws.uiuc.edu/). CASTNET operates 2 sites in Florida that measure dry deposition of acid anion pollutants. Co-location of CASTNET and NADP sites allows these programs to estimate ratios of wet/dry deposition and wet/total deposition (http://www.epa.gov/castnet/). The most recent year of complete information available is 2002. Combining the information from these sources provides estimates of acidic deposition for the major NFs in FL units for 2002. Total sulfate deposition (kg/hectare/year, as SO_4) on the Apalachicola, Ocala and Osceola National Forests was 13, 15, and 14, respectively. Total nitrate deposition (kg/hectare/year, as NO_3) on the Apalachicola, Ocala and Osceola National Forests was 10, 11 and 11, respectively. The acid deposition numbers cited above are slightly improved from what was reported in the 2002 Monitoring and Evaluation report. It is believed acid deposition rates are improving slightly due to the final implementation by electric generation utilities of USEPA's "acid rain program".

Mercury Deposition: The Mercury Deposition Network (http://nadp.sws.uiuc.edu/mdn/) operates as part of the National Atmospheric Deposition Program. National Forest management does not contribute to mercury deposition, but the detrimental effects of mercury deposition to freshwater fish species is noteworthy. Florida receives some of the highest mercury deposition in the country. Mercury concentrations average 13

nanograms per liter in northern Florida. Due to the atmospheric deposition of mercury the State has a state-wide freshwater fish consumption advisory in effect.

Evaluation: The Forest Service cooperates with FDER in monitoring air quality at several sites on the Forest. Air quality in the vicinity of the Forest has improved some during FY2003 and remains within National/State air quality standards

Forest Plan Standards and Guidelines for fishery resources are found on pages 3-31 through 3-32 of the Forest Plan and include standard and guideline **WL-21.**

1.22 Monitoring Question: Which water bodies were fertilized?

Item to Measure: Report which water bodies were fertilized

Results: Under the Forest Plan only manmade water bodies (Borrow Pits) will be fertilized for fishery enhancement. Borrow Pits are managed for fisheries on the Apalachicola and Osceola National Forests. Due to the prolonged drought in Florida water levels are very low in both manmade and natural water bodies. Because of the low water levels, the Borrow Pits have not been fertilized since 2000.

Forest Plan Standards and Guidelines for tree regeneration and site preparation are found on pages 3-20 of the Forest Plan and include standards and guidelines **VG-17** through **VG-19.**

1.23 Monitoring Question: Has soil disturbance been minimized in preparing longleaf and slash pine sites for tree regeneration?

Item to Measure: Percent of the area treated with soil displacement

Results: 142 acres were prepared for planting longleaf pine by roller chopping in 2003 and soil disturbance was less than 10% of the area.

Evaluation: Single pass roller drum chopping in palmetto-gallberry understory types provides for minimum soil disturbance.

Forest Plan Standards and Guidelines for Range are found on pages 3-14 and 4-41 of the Forest Plan and include standards and guidelines **RA-1,** and **7.2-1** through **7.2-5.**

1.24 Monitoring Question: What are the effects of cattle grazing on vegetation?

Item to Measure: Biotic index along a transect, include a transect across fence lines

Results: During FY03 only two of the four allotments on the Apalachicola NF remained active, with only one having cows on it. According to the Forest Plan, the two allotments that remained vacant during the last five years will be closed.

Evaluation: Field observations indicate the low density of cows (approximately one cow per 50 acres) on the occupied allotment does not significantly alter the vegetative composition of the range allotments. Past monitoring showed no tendency of cattle to graze on the T&E plants. Feeding and watering structures are positioned in areas where T&E plants do not occur. Since burning for forage production is required in active allotments, T&E and Sensitive plants habitat in active allotments is generally of higher quality than on the forest in general.

Sustainable Multiple Forest and Range Benefits

Forest Plan Goal:

- Provide a wide range of accessible recreation opportunities to accommodate the varied ability levels of forest visitors.

Forest Plan Objective:

- Make at least 20 percent of the developed site (level 3 and above) recreation opportunities universally accessible. Provide fully accessible opportunities on at least one swimming area, one hiking trail, and one fishing pier/boating site per forest. The long-term objective is to make all developed sites universally accessible.

2.1 Monitoring Question: What percent of each type of recreation site (at least 1 swimming, 1 hiking, 1 fishing) is accessible? (Level 3 and above)

Item to Measure: Percent of accessible by type of recreation site

Results: Table 36 shows the percent of areas meeting ADA standards. There are 35 developed sites level 3 and above, and one level 2 boatramp/fishing pier, where this objective applies. This table shows the sites that meet some level of accessibility standards.

Table 36. Recreation Sites Meeting ADA Standards.

Percent of Recreation Sites Meeting ADA Standards	
Location	**Recreation Site**
Apalachicola National Forest	Leon Sinks Trail Head – 100% (hiking trail – 20%)
	Silver Lake Day Use (picnic and swim) – 75%
	Wright Lake Campground – 50%
	Hickory Landing Campground– 25%
	Whitehead Landing Campground – 25%
	Fort Gadsden Historic Site – 25%
	Mack Landing Campground – 25%
	Camel Lake Campground – 0%
Ocala National Forest	Juniper Springs Recreation Area – 25%
	Salt Springs Recreation Area – 75%
	Silver Glen Springs Day Use – 25%
	Fore Lake Recreation Area – 25%
	Mill Dam Day Use (picnic and swim) – 25%
	Alexander Springs Recreation Area – 25%
	Doe Lake Group Camp – 50%
	Lake Dorr Cabin – 100%
	Wildcat Lake Day Use – 25%
	Lake Delancy East Campground– 25%
	Lake Delancy West Campground – 25%
	Buck Lake Campground – 25%
	Hopkins Prairie Campground – 25%
	Juniper Wayside Day-use – 50%
	Lake Dorr South Boatramp and Fishing Pier – 75%
	Clearwater Lake Campground –0%

	Big Scrub Campground –0%
	Big Bass Campground –0%
	River Forest Group Campground –0%
	Lake Shore Group Camp –0%
	Sweetwater Cabin –0%
	Lake Eaton Campground –25%
	Lake Dorr Campground –0%
Osceola National Forest	Olustee Beach Day Use (picnic and swim) – 75%
	Ocean Pond Campground – 75%
	Olustee Depot VIC – 100%
	The Landing Group Camp – 75%
	Olustee Battlefield – Niswander Hiking Trail – 100%

Evaluation: Eight of the 35 developed campgrounds do not meet this objective. Efforts are underway to achieve 20% accessibility at all level 3 sites. With four years of the Forest Plan completed, it is anticipated that the forest will be able to achieve this objective within the next six years.

Forest Plan Goal:

- Provide safe and enjoyable visitor opportunities at developed recreation areas by maintaining, retrofitting, or replacing recreation facilities or upgrading amenities.

Forest Plan Objective:

- Upgrade, refurbish, or replace four recreation facilities per year.

2.2 Monitoring Question: Are developed recreation facilities providing Meaningful Measures (MM) standard for safety, cleanliness, and service? Do they reflect quality and customer service?

Item to Measure: Evaluations of each facility component are define by MM standards and customer survey forms

Results: For FY 2003, the continuing evaluation of sites where use was too low to justify the retention of these areas on the Forest Fee Demo Program, resulted in the fee being eliminated at Halfmoon Lake Day-use Area on the Ocala National Forest.

MM also describes standards to provide a desired quality experience and customer service. Areas that were being reconstructed in FY 2003, and will meet all applicable MM quality standards when completed are: Camel Lake Campground on the Apalachicola NF, and the Alexander Springs Day-use Area on the Ocala NF. Recreation areas managed by the Ocala Recreation Complex special use permit (concessionaire) are expected to meet all applicable MM standards for quality of experience and customer service.

During FY 2003, Fee Demo revenues have been used to repair, replace and augment facilities, especially picnic tables and garbage containers, at numerous recreation areas thus enhancing the quality of experience and customer service provided. The first round (5-year cycle) of facility condition inspections of developed recreation areas were completed for the NFs in Florida in FY 2002, so none were conducted in FY 2003, but the inspection cycle will resume in FY 2004.

Evaluation: In general, the lower level (amenity level 2 and below) areas attain approximately 50% to 75% of applicable Meaningful Measures standards for quality experience and customer service, whereas areas at level 3 or higher attain from 75% to 100% of these standards. Recommended actions include removal from the Fee Demo program of some areas showing very low use, and either closure of these areas or curtailment of services and/or facilities.

Forest Plan Goal:

- Provide a system of marked recreational trails and support facilities that will promote a variety of experiences for both motorized and nonmotorized trail users.

2.3 Monitoring Question: What system of trails has been designated on the ground, and are they maintained at appropriate level?

Item to Measure: Miles of trails, by type and condition

Results: The following table displays the trail system for the National Forests in Florida by mileage and type. Inspections on the Apalachicola NF, Ocala NF, and the Osceola NF have confirmed that all trails are being maintained at the 75% to 100% level of all applicable MM standards for quality of experience and customer service.

Table 37. Miles of Trail by Type

Forest	Type of Trail	Mileage
Apalachicola	Hiking	134.5*
	Horse Trail	29.0
	Off–Road Bicycle	10.0
Ocala	Hiking	80.3*
	Horse Trail	134
	Off-Road Bicycle	22.0
Osceola	Hiking	26.4*
	Horse Trail	53.0

*includes 36.5 miles of hiking trails in wilderness.

Evaluation: Recommended actions are to relocate some trails out of wet and eroding areas and off of roads also used by motorized vehicles, and also to construct additional footbridges and boardwalks on selected trail segments, for greater degree of attainment of MM standards.

Forest Plan Objective:

- Establish and certify for public use the remaining 750 miles of the Florida National Scenic Trail needed to complete a continuous trail from Big Cypress National Preserve to Gulf Islands National Seashore.

2.4 Monitoring Question: How many miles of Florida National Scenic Trail have been certified for public use?

Item to Measure: Number miles of Florida National Scenic Trail certified

Results: To date, 738 miles are certified and open for the public use (57% of the 1,300-mile long FNST) with 153 of those miles existing within the National Forests in Florida. 66 miles of trail were certified and opened to the public in 2003, including the first section on privately owned land (18 miles

through Plum Creek Timber Company land). Approximately 258 miles of trail are currently proposed for certification.

The Florida Trail Association's volunteers donated 59,400 hours to build and maintain the FNST in the past year. Nine miles of new FNST were constructed in Ocala National Forest in 2003. Also constructed were 3,657 feet of boardwalks, 15 footbridges, seven campsites, 12 kiosks, one shelter, and 25 unauthorized-use barriers, erosion-control stairs and blaze posts. FTA volunteers also maintained nearly 1000 miles of hiking trails. Trail development efforts were focused in Apalachicola, Osceola and Ocala national forests, Gulf Islands National Seashore, Econfina Creek WMA, Aucilla WMA, Big Cypress National Preserve, Cross Florida Greenway, Rice Creek Sanctuary, St. Marks National Wildlife Refuge, Eglin Air Force Base, Camp Blanding, Blackwater River State Forest, Lake Butler Forest and Bull Creek WMA. Also in the past year, 633.5 miles of trail were inventoried providing baseline data. 31 volunteers contributed 278 hours in helping to inventory the trail in 2003. A total of 984 miles of trail have been inventoried, and its GPS data has been incorporated into a Geographic Information System that is being used to facilitate trail construction, management and FNST land acquisition.

In FY03, the FNST Land Acquisition Program successfully negotiated and acquired two parcels protecting 51 acres and 0.6 mile for the trail. The USDA Forest Service has contracted with the National Park Service's National Trails Land Resources Program Center to acquire land to protect the route of the FNST. Currently, nine acquisition projects are underway with willing sellers that will result in acquisition of over 7,300 acres for 27 miles of FNST at an estimated cost of $12.6 million. The Florida Trail Association acquired its first parcel for the FNST, a 0.2 acre tract which provides additional access to the Mills Creek property acquired by the USFS in 2002. To date, 668 acres of land have been acquired for the FNST in five tracts protecting 3.4 miles of trail. Expenditure for these land purchases total $3,913,000.

Evaluation: Progress on certifying the trail is proceeding well within the projected amount needed to accomplish the objective. The challenge cost share agreement between the National Forests in Florida and the Florida Trail Association should be continued in order to place emphasis on building trail, certifying sections, and acquiring land for the trail.

Forest Plan Goal:

- Protect rivers and preserve their cultural/historical, ecological, fish and wildlife, recreational, geological, or scenic values.

2.5 Monitoring Question: Have rivers been recommended as wild and scenic, and what is their status?

Item to Measure: Status of Record of Decision/Legislative EIS

Results: As reported in the 2002 M&E Report, rivers have not been recommended, and a Legislative EIS has not been completed. Management of the river corridors will be based on their continuing status as proposed wild and scenic rivers.

Evaluation: Direction from the Washington Office and Region Offices continues to focus on ensuring there is strong local support for river designation, and that forests should not move forward with a Legislative EIS for river or wilderness recommendation unless there is support for it from the state's congressional delegation and a commitment to introduce a bill into Congress.

Forest Plan Goal:

- Increase public awareness of wilderness values. Protect and enhance resources, quality, and wilderness character of designated wilderness areas.

2.6 Monitoring Question: Have wilderness opportunities been increased and has Clear Lake been recommended for wilderness status?

Item to Measure: Status of Record of Decision/Legislative EIS

Results: Clear Lake has not yet been recommended for wilderness. The area continues to be managed as a Wilderness Study Area to protect wilderness values.

Evaluation: Legislative EISs for wilderness designation do not go forward unless there is support for it from the state's congressional delegation and a commitment to introduce a bill into Congress. The Forest needs to continue to work with Florida's congressional delegation to gain support to draft and introduce new wilderness legislation for Florida. It is possible that both wilderness recommendations and

2.7 Monitoring Question: Has wilderness character been protected?

Item to Measure: Percent of land in primitive and semi-primitive Recreation Opportunity Spectrum classes, trail-use data; Ecosystem plots

Results: This measure was originally recommended to be dropped from monitoring, since records of the previously established wilderness plot locations have been lost. However, the forest hopes to re-establish these ecosystem plots in each wilderness area in 2004-05, either in conjunction with the FNAI vegetation monitoring plots or as a separate monitoring effort. Continuing threats to wilderness character include military overflights on the Ocala and Apalachicola National Forests, motorized incursions into wilderness by OHVs and ATVs, the boat dock structure at Juniper Prairie Wilderness, the inholding in Juniper Prairie Wilderness, and the old CCC bridge in the Mud Swamp/New River Wilderness.

Evaluation: The forest wilderness specialist will need to work with the forest botanist and district biologists to locate and measure ecosystem/vegetation plots in wilderness.

2.8 Monitoring Question: Has Natural Area wilderness study area been recommended for release?

Item to Measure: Status of Record of Decision/Legislative EIS

Results: Natural Area Wilderness Study Area has not been recommended for release.

Evaluation: Actions on this should be combined with legislative actions on wilderness and wild and scenic rivers designation, since only Congress can release an area from Wilderness Study Area status. Until that time the area will continue to be managed as a Wilderness Study Area. At present, there is no support from Florida's congressional delegation to move forward on a legislative EIS.

Forest Plan Objective:

- Within 2 years of Forest Plan approval, develop implementation plans for a system of designated trails and marked, numbered roads in areas where motorized vehicles and bicycles are restricted (*see* Access Maps, Appendix A). This process will incorporate existing travelways as much as possible and include public participation and collaboration with local user groups.

2.9 Monitoring Question: Is the access policy having the desired effect of protecting the resources?

Item to Measure: Photo points at areas of resource concern

Results: Photos points were not established or measured in FY2003. Photo points will be established at the time of designation to accurately document the baseline condition. Site-specific field analysis of the unclassified roads proposed to be designated as trails was conducted through 2003. Each forest is preparing an analysis of the alternatives for Access Designation and their effects. Once the NEPA process is completed and a system of trails is designated, each forest will select a sample of designated trails and key resource areas to monitor. Monitoring will also occur on a sample of unclassified roads that have not been designated to monitor compliance. Access designation for the Ocala NF and Osceola NF should be implemented in FY 05. Access designation for the Apalachicola should be implemented in FY 06.

Evaluation: Maps and GIS analysis of the alternatives have been completed for the Osceola and Ocala NFs. The Apalachicola is still generating the alternative maps and running GIS analysis, but these are planned to be completed in FY 2004 so that implementation can begin in FY 2005.

Forest Plan Goal:

- Preserve significant heritage resources as remnants of our cultural heritage by locating, evaluating, and protecting heritage resource sites.

Forest Plan Objective:

- Evaluate for significance five archeological sites each year.

2.10 Monitoring Question: Are heritage resource sites being evaluated and protected?

Item to Measure: Number sites evaluated; Annual report on protection efforts

Results: Three sites were evaluated in FY2003 on the Apalachicola NF. Site protection efforts included on-site archaeological and or historic architecture monitoring of several developed recreation areas including demolition of old toilet buildings at multiple recreation areas, structure demolition and dredging at Alexander Springs, shingle replacement on the Juniper Springs picnic shelter and grill installation at Lake Delancy. Additional monitoring occurred at a wet site damaged from illegal access during FY2002, a law enforcement search involving heavy equipment and an assessment of an inadvertent discovery of underwater cultural material at a popular spring in the Ocala National Forest. Seven temporary special use permits under the authority of the Archeological Resources Protection Act were administered during FY2003 for various projects. A public presentation entitled “Loving the Land to Death, Effects of Forest Visitation on Archaeological and Historical Sites” was presented to local civic and avocation organizations. Protection of sites was incorporated in the Rx310 Fire Effects class at the Interagency Prescribed Fire Training Center.

Evaluation: Site protection measures were within the Forest Plan objective for FY 2003. The objective to evaluate five archeological sites in FY2003 was not met. Instead, FY2003 work focused upon compliance work associated with fire hazard fuel reduction and suppression, Southern Pine Beetle control, special uses, recreation developments and forest access analysis. Additionally, professional staff detailed off-forest for approximately three months to support western U.S. forest wildfire suppression and the shuttle recovery effort in Texas.

Forest Plan Goal:

- Protect, enhance, and, where necessary, restore the forests' scenery resource values.

Forest Plan Objective:

- Complete the inventory of existing scenic conditions and proposed scenic classes and implement updated Scenery Management System within 3 years of the adoption of this plan.

2.11 Monitoring Question: Are the scenic resources being protected, enhanced, and where necessary, restored?

Item to Measure: Implementation of the Scenery Management System (SMS) and management of scenery according to the recommendations of the SMS

Results: This objective was to be accomplished by June, 2002. Currently, the 2380 section of the Forest Service Manual is being revised to provide direction for implementation of the SMS, and national SMS Training Modules are being developed (projected to be available in FY 2004 or FY 2005) to provide orientation level, working level, and technical level knowledge. Until forest personnel have received training in SMS, the visual management system (VMS) is still in place. Forest landscape architects attended SMS training at the Eastern and Southern Regional University held in Cincinnati in March, 2003. This was the first SMS training conducted in the Southern Region since 1995. Technologies (ArcGIS) were presented at the ESRU that should enable Forest landscape architects to complete the SMS analysis and mapping in FY 2004 or FY2005. It is also anticipated that SMS training modules will be available for Forest Orientation and Implementation training to be conducted on the Forest in FY 2004 or FY 2005. The inability of the Forest to implement the SMS by the target date of June, 2002, is directly attributable to the lateness of the availability of regional and national direction on the methodology and technology to be employed.

Evaluation: Although there are significant differences between the new SMS and the old VMS, there are also many aspects of the two systems that are similar and consistent. For instance, some new mapping and field ground truthing will be necessary, but much of the mapping and other inventorying done previously for the VMS will be able to be verified and used within the SMS with only minor modifications. Likewise, many of the mitigation measures described for the VMS are also valid for the SMS. Therefore, it is considered appropriate and adequate that the previous VMS direction for coordination with other resources be continued within the LMP until the SMS is fully implemented. Within the next year, Forest SMS program managers will continue verifying and updating the old VMS inventories (primarily within the GIS), and defining SMS management direction as part of Forest-wide direction and management area direction, if applicable, to be included in the next update of the LMP.

Forest Plan Goal:

- Interpret forest attributes such as scenic byways, cultural sites, and special areas. Interpret forest management practices, emphasizing how sand pine clearcutting and prescribed fire improve ecosystem functions.

2.12 Monitoring Question: Do forest visitors understand Forest Service practices and do they value and respect the resource being interpreted?

Item to Measure: Number of opportunities and facilities (signs, talks, brochures) per district and quality

Results: The Apalachicola National Forest provided 24 interpretive/educational programs in FY03. The Osceola provided 22 interpretive/educational programs and the Ocala provided 59 interpretive programs.

Apalachicola National Forest programs included: one visit to FSU to speak to 30 students about ATV damage on the forest. They also gave 6 independent programs on tread lightly to an audience of approximately 57 people and 2 Leave No Trace programs to 25 people. They also gave one program to the prescribed fire council and six programs on the red-cockaded woodpecker that included an audience of over 1,000 people. One educational program to the Florida Anthropological Society meeting to 100 people in Tallahassee and seven programs to the Florida Ornithological Society to 20 members.

Osceola National Forest programs included:
Event: Baker County Fair 10/1-5
Audience: Thousands of participants
Program: General Forest information and prevention

Event: Baker County High School Alternative Class 10/2
Audience: 50 students 9 – 12 grade
Program: Environmental Education (Forestry)

Event: Baker County High School Alternative Class 10/8
Audience: 50 students 9 – 12 grade
Program: Environmental Education (P-burning)

Event: Epiphany School 10/8
Audience: 100 students and parents
Program: Environmental Education

Event: Career Day Summers Elementary 10/10
Audience: 200 students and parents
Program: Natural resource related careers

Event: Project REACH, Westside Elementary 10/16
Audience: 60 2nd graders
Program: General Forest information and careers

Event: Smokey at Wal Mart, Lake City 10/19
Audience: Hundreds of participants
Program: Prevention

Event: Columbia High School Home Coming Parade 10/24
Audience: Thousands of participants
Program: Prevention

Event: Westside Elementary Fall Festival 10/26
Audience: 700 students K-3
Program: General Forest information

Event: Smokey at Westside Elementary
Audience: All 1st graders (200)
Program: Prevention

Event: Farm City Days, Lake Butler 11/19
Audience: All 5th graders (200)
Program: General Forestry and conservation

Event: Lake City Christmas Parade 12/2
Audience: Thousands
Program: Prevention

Event: Baker County Christmas Parade 12/7
Audience: Thousands
Program: Prevention

Event: Olustee Battle Reenactment 2/14-16
Audience: Approximately 25,000
Program: Cultural resource interpretation

Event: University of Florida Silvicultural Class 3/21
Audience: University students (30)
Program: Forestry

Event: Forest clean-up 4/5
Audience: 50
Program: Litter awareness

Event: Reading at the Depot (each Wednesday in June and July)
Audience: Children ages 3 - 13 (80)
Program: Reading about nature

Event: Keller 5/1
Audience: 5th grade classes (60 students)
Program: Prescribed burning

Event: Summers Elementary EE Fair 5/2
Audience: All 4th graders (200)
Program: Environmental Education

Event: State Park Managers Meeting 6/4
Audience: State Park employees
Program: Partnerships

Event: 4-H Environmental Camp 6/25
Audience: 40 children (11 – 15 years old)
Program: Environmental Education

Event: Columbia County Public Safety Day 8/2
Audience: Hundreds
Program: Firewise

The Ocala National Forest

Lake George Ranger District:

Participated in the Bear Festival in October 2003, hosting two of the five bear country field trips via bus to a location on the Seminole District.

Approximately 1700 visitors watched a video on canoe etiquette, rules and regulations on the Juniper Creek run.

Event: 2 Hiking Trips to Lake George
Audience: 44 people
Program: Forestry

Event: 2 Interpretive Walks to Pats Island
Audience: 50
Program: Forest Ecosystems

Event: 2 Interpretive Walks
Audience: 41 people
Program: Scrub and Pine Flatwoods Ecosystem

Event: 2 Interpretive hikes to Lake Eaton Sinkhole
Audience: 48 people
Program: Scrub ecosytems

Event: Prescribed Burning Interpretive Walk
Audience: Seniors – 25 people
Program: Environmental Education on Prescribed Burning

Event: Davenport Landing Interpretive Hike
Audience: Forest Visitors – 23 people
Program: Archeology

The Ocala National Forest

Seminole Ranger District:

Participated in the Bear Festival in October 2003, hosting field trips via bus to a location on the Seminole District. The Seminole printed and distributed several hundred Black Bear Festival folders with interpretive information on the National Forests in Florida and on bear safety.

The Seminole Ranger District participated in providing 49 interpretive programs on prescribed burning, wildland fires, archeology, wildlife and Smokey Bear programs.

In addition to the above accomplishments a new National Forests in Florida website was developed, designed and put on the Internet. The Forests tabloid, the Sunshine Connection was revised and printed. Nine new brochures were designed and printed and one marketing folder for the Olustee depot was designed and printed. A Marketing Plan for the Olustee Depot was developed to attract more visitors. Twelve new wayside exhibits were designed and fabricated for the Alexander Springs Recreation Area.

Evaluation: The interpretive program in FY2003 fulfilled the goal as stated in the Forest Plan. As noted in the previous year's M&E Report, the items measured may not fully answer the monitoring question as far as understanding and values. Either the monitoring question or the items measured may need to be reviewed.

Forest Plan Goal:

- Contribute to the social and economic well-being of local communities by promoting sustainable use of renewable natural resources and participating in efforts to devise creative solutions for economic health.

2.13 Monitoring Question: How are we contributing to the socioeconomic well-being?

Item to Measure: Returns to counties, indirect benefits through timber, recreation, range allotments, status report on rural development programs

Results: The following tables show the gross receipts by source for the National Forests in Florida, and the payments to counties containing national forest land in FY2003.

Table 38. Gross Receipts by Source

Source	Apalachicola	Ocala	Osceola	Choctaw-hatchee	Total
Recreation User Fees	956	1,221	179		2,356
Timber Products Cut	138,052	689,146	202,521		1,029,719
Grazing Fees	426				426
Land Use Fees	39,121	66,773	3,342		109,236
Mineral Fees		1,000	3,797		4,797
Power	39,233	31,120	1,604		71,957
Special use Fees		154,840	31,776	6,223	192,839
Fee Demo	27,142	208,278	70,565		305,985
Total	**244,930**	**1,152,378**	**313,784**	**6,223**	**1,717,315**

Table 39. Secure Rural Schools and Community Self-Determination Act Receipts

Apalachicola		Ocala		Osceola		Choctawhatchee	
Franklin	$ 25,527.59	Lake	$ 269,673.55	Baker	$258,135.07	Okaloosa	$ 706.30
Leon	$120,898.70	Marion	$ 883,050.72	Columbia	$228,318.83	Walton	$ 703.60
Liberty	$307,964.94	Putnam	$ 75,765.91			Santa Rosa	$ 145.85
Wakulla	$195,132.96						
Total	**$649,524.19**		**$1,228,490.18**		**$486,453.90**		**$1,555.75**

Table 40. Payment in Lieu of Taxes

Apalachicola		Ocala		Osceola		Choctawhatchee	
Franklin	$ 20,147.00	Lake	$ 24,594.00	Baker	$ 37,726.00	Okaloosa	$5,214.00
Leon	$ 84,716.00	Marion	$ 79,821.00	Columbia	$ 35,240.00	Santa Rosa	$1,987.00
Liberty	$212,540.00	Putnam	$ 10,103.00			Walton	$ 510.00
Wakulla	$139,381.00						
Total	**$456,784.00**		**$114,518.00**		**$ 72,966.00**		**$7,711.00**

Evaluation: Federal legislation (Secure Rural Schools and Community Self-Determination Act of 2000, P.L. 106-393) changed the way Forest Service payments to states are calculated. Since 1908 under legislation commonly known as the 25 Percent Fund Act, 25% of any revenues from National Forest lands within state boundaries were returned to that state to be used for roads and schools. The state then distributed those funds to their counties with National Forest lands in their boundaries. The new legislation gives counties containing National Forest lands the option of taking the average high-three 25% payments they received between the years 1986 and 1999 in place of the 25% payment they would receive from Forest revenues from the most recent year. In FY 2001, all counties elected the "full payment" (the law's term used to mean the "average of the high-three"). Total payments to counties increased to $3,459,966 in FY 2002, and remained at that level in 2003. Annual total payments will remain at that level until 2006.

Forest Plan Standards and Guidelines for special forest products are found on pages 3-22 and 3-23 of the Forest Plan and include standards and guidelines **VG-33** through **VG-36.:**

2.14 Monitoring Question: How much of each "special forest product" did we give permits to be collected and in what locations?

Item to Measure: Quantity of each type, ranger district and compartment

Results: The actual quantity of products *collected* is unknown for 2003. The quantity for which collection permits were *issued* is shown in the following table. Permits are usually issued on a broad area basis and specific locations are generally not recorded. 642 permits were issued. 45 permits were free-use and 597 were commercial permits. Total value of products was $16,550.46.

Table 41. Special Product Summary

Location	Firewood (CCF)	Palmetto Berries (lbs.)	Palmetto Fronds (each)	Plants (lbs)	Plants (each)	Pine Boughs (each)	Pine Straw (cu. ft.)	Christmas Trees (each)	Crooked Wood (piece)
Apalachicola	119	0	0	3.5	0	0	5	0	0
Osceola	1	0	0	4,000	0	0	0	0	0
Lake George	86	0	5,000	0	1,240	4,000	0	159	0
Seminole	198	2,500	40,500	1,500	600	27,500	0	0	35,045
Total	**404**	**2,500**	**45,500**	**5,503.5**	**1,840**	**31,500**	**5**	**59**	**35,045**

Evaluation: In the context of acres and amounts of the above resources present on each National Forest, the quantities of these special products removed does not appear to be significant. More detailed information on specific sites should be tracked to help determine cumulative amounts in the same area.

Forest Plan Standards and Guidelines for timber production is found on page 3-21 of the Forest Plan and includes standard **VG-29.**

2.15 Monitoring Question: How much timber was offered for sale?

Item to Measure: MMCF (million cubic feet) of timber offered annually by type, product, and forest

Results: 5.01 MMCF was offered for sale in FY 2003: 4.25 MMCF on the Ocala, 0.44 MMCF on the Osceola, and 0.32 MMCF on the Apalachicola. The four-year total of timber offered for sale through FY's 2000-2003 is 20.23 MMCF, which is 20% of the maximum allowed.

Evaluation: The standard in the Forest Plan related to timber production places a limit of selling no more than 103 MMCF of timber in the ten-year planning period. The total volumes offered for sale and actually sold are within the standard.

Forest Plan Standards and Guidelines for special uses are found on pages 3-10 through 3-12 of the Forest Plan and include standards and guidelines **LA-8** through **LA-18.**

2.16 Monitoring Question: Are special-use permits in compliance and if not, what actions are taken?

Item to Measure: Number of cases of noncompliance actions taken

Results: In FY 2003, the National Forests in Florida had a total of 714 special use permits. Due to budget constraints, compliance monitoring was completed on a sample of special use permits in FY 2003. Based on this information, it is estimated that generally less than 1% of permits are in noncompliance.

We find ourselves processing new applications rather than completing inspections of current uses to meet public demand. For the most part, the Forest has found it almost impossible to inform new special use applicants that we are not accepting new applications until all current uses have been inspected and brought up to standard.

Evaluation: Our biggest challenge is not having the funds to adequately manage the program.

Forest Plan Standards and Guidelines for road management are found on pages 3-7 and 3-8 of the Forest Plan and include standards and guidelines **IN-1** through **IN-3.**

2.17 Monitoring Question: How many miles of roads have been converted to another use or otherwise closed?

Item to Measure: Miles of roads closed and deleted in transportation inventory system updates

Results: 0 miles of roads were decommissioned in FY 2003.
0 miles of roads were deleted from the system.

Evaluation: Road condition surveys utilizing electronic road logs were accomplished on 20% of maintenance level 3, 4, and 5 roads and a random sampling of maintenance levels 1 and 2 roads. Since these routes are being metered and loaded directly into the INFRA system, mileages were revised which resulted in an increase of 23 miles of system roads. No actual construction of new roads occurred last year.

The DEIS for Access Designation for the Ocala NF has been released. The Osceola Access Designation EA has been completed. The plans cover specific designated areas on each forest. Access Designation on the Apalachicola NF will be completed in FY 05.

Organizational Effectiveness

Forest Plan Goals:

- Ensure a philosophy of service is paramount in our relationship with the public in the management of forest resources.
- Be aggressive and innovative in providing for public participation in planning, managing, and monitoring of the national forests.
- Strengthen partnerships and actively pursue communication, cooperation, and partnerships with other national forests, other agencies, groups, local communities, organizations, and tribal governments to serve the public interest, consistent with the Forest Service Mission.
- Meet regularly and often with county commissioners, congressional staff, tribal governments, and State agency directors to ensure a high level of positive communication needed to maintain national forests for quality public uses and values.

Forest Plan Objective:

- Implement surveys for determining public satisfaction with National Forests in Florida programs.

3.1 Monitoring Question: Are people satisfied with service from the National Forests in Florida?

Item to Measure: Public survey; public inquiries

Results: This item is to be reported at five-year intervals.

Forest Plan Objective:

- 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, and tribal governments.

3.2 Monitoring Questions: How much public participation do we have? Have partnerships been strengthened?

Items to Measure: Status report

Results: Public involvement continues to be a priority for the Forest. Numerous opportunities for public input to processes were provided throughout the year through workshops, scoping letters, public meetings, and forest website. Public input was received on several project level environmental analyses and the large public participation effort directed at forest access continued.

Indicative of the forest's commitment to public involvement is the ongoing Access Designation Process. This progressive public involvement strategy has involved thousands of forest users in determining the final access opportunities for the forests. The Access Designation Process should be finalized this year.

The forest continues to seek opportunities for accomplishing work in a collaborative way through working relationships with partners. In an informal way, we have partnered with hundreds of groups, agencies, individuals, and organizations. Almost everything we do requires some type of partnering effort.

The National Forests in Florida developed the following formal partnerships in FY 2003:

4 Challenge Cost Share
5 Participating Agreements
1 Amendment to Participating
6 Collection Agreements
5 Law Enforcement Cooperative Agreements
11 Interagency Agreements
5 Amendments to Interagency Agreement
7 Memoranda of Understanding

Evaluation: This item has been identified to be dropped from the Forest Plan monitoring plan based on the Forest Plan Amendment #2. It is reported here since the monitoring report covers FY2003, when this monitoring item was still in effect.

III. Evaluation of Outcomes on the Land

Major Findings and Evaluation:

Based on the expected annual average of outcomes for the planning period, some of the monitoring items reflect that expected outcomes are not progressing within the rate to achieve the desired conditions, goals and objectives of the Plan. There are areas where monitoring indicates follow-up action is needed.

Forest Plan Objective:

- Restore between 10,000 and 15,000 acres of off-site slash pine to the appropriate native vegetation in the next 10 years. Remove slash pine from 8,000 acres of mixed longleaf/slash pine stands on the Osceola NF. The long-term objective is to restore all the off-site slash pine to the appropriate native vegetation.

1,108 acres have been restored to longleaf pine from off-site slash pine through the end of FY 2003. No slash pine was removed from mixed stands on the Osceola in FY 2003. In order to meet the 10-year objective, efforts should be made to increase the acreage of restoration in future years. More effort should be made to schedule removal of slash pine from mixed stands on the Osceola National Forest.

Forest Plan Objective:

- Thin 45,000 to 55,000 acres of longleaf and slash pine stands to release overcrowded live crowns, favor appropriate pine species regeneration, increase stand growth, allow more sunlight onto the forest floor, and increase suitable habitat for red-cockaded woodpeckers (RCWs).

During FY 2003, 264 acres were offered for thinning purposes. A total of 3,916 acres have been offered through the end of FY 2003. In order to meet the Forest Plan objective, areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling.

Forest Plan Objective:

- Initiate uneven-aged management with group selection harvests on 30,000 to 33,000 acres principally in longleaf pine forests with some in slash pine forests.

Through the end of FY 2003, 1,801 acres were offered with uneven-aged management harvest methods. None were offered in FY 2003. In order to meet the objectives of the Forest Plan, areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling.

Forest Plan Objective:

- Initiate irregular shelterwood harvests on between 1,800 and 2,000 acres of slash pine forests.

There were no acres of irregular shelterwood offered for harvest through the end of FY 2003. In order to meet the objectives of the Forest Plan, there should be an effort made to schedule areas for harvest using this method. Areas that may be suitable for this work should be

surveyed, examined, and assessed for inclusion in future years work scheduling. This objective may no longer be applicable as a forest objective and will be considered in detail for amendment in the Forest Plan based on the five-year monitoring findings.

Forest Plan Objective:

- Regenerate between 39,000 and 41,000 acres of sand pine on the Ocala NF

Timber harvest is the primary management tool for maintaining scrub jay habitat on the Ocala National Forest. Clear-cutting of mature sand pine regenerates the scrub habitat necessary for the jay. A regular cycle of sand pine regeneration is being employed to maintain the jays across the scrub on the Ocala National Forest. At the end of FY 2003, there were 52,388 acres of sand pine scrub in the 3-15 year old age class. A total of 7,749 acres of sand pine have been committed to regeneration harvest through the end of FY 2003. 2,456 acres of sand pine were offered for regeneration harvest in FY 2003.

Forest Plan Objective:

- Within 2 years of Forest Plan approval, develop implementation plans for a system of designated trails and marked, numbered roads in areas where motorized vehicles and bicycles are restricted (*see* Access Maps, Appendix A). This process will incorporate existing travelways as much as possible and include public participation and collaboration with local user groups.

The Access Designation Process is designed to proactively address the growing demand and subsequent resource damage of bicycles, off-highway vehicles, all-terrain vehicles and other motorized access on the forests. Although a decision was made in FY2002 to combine all three forests analysis into one Environmental Impact Statement (EIS), this created a large document and made tracking site-specific details difficult. A decision was made in FY2003 to separate the analysis by forest, with the Osceola NF to complete an Environmental Assessment (EA) and the Ocala and Apalachicola NFs to complete Environmental Impact Statements (EIS) due to their heavier use and amount of unclassified roads. New forest-level interdisciplinary teams were identified for each district so that the districts could take the lead on providing site-specific analysis and the staff in the Supervisors Office could compile the findings.

Because of these delays, the 2-year time frame expired and the designation process was not complete. Since the Forest Plan did not provide guidance for this situation, it was decided to amend the Forest Plan and remove the reference to the two-year time frame and continue as fast as possible with the designation process.

Completion of this process is anticipated to be in spring 2005.

Forest Plan Objective:

- Prescribe burn on average every 3 years with varied intervals on any given site to restore natural processes in all sites where the natural-fire-return interval was less than 10 years. Strive to burn 50 percent of those acres between March 15 and September 30 and 20 percent between May 1 and July 31. This includes wilderness, wilderness study areas, and the Savannah research natural area.

Of the total 507,740 acres in Management Area 7.1, 86% of this type was burned in the last 3 years (2001,2002, and 2003). In FY 2003 190,090 acres were burned, with the majority being in the winter and approximately 47% being in the growing season. The last two years, however (2002-2003)

reflect a substantial increase in accomplishments since the drought. The backlog of prescribed fire needs should be accomplished as the Forest moves into a more favorable weather pattern.

A total of 222 miles of re-worked (plowed, bladed, and disked) prescribed fire firelines were installed during FY 2003. Four miles were plowed for prescribed fire and wildfire generated eight miles of firelines, a reduction from FY 2002. The Forest has been able to obtain the goal of emphasizing a reduction in the use of plowed firelines.

Forest Plan Goal:

- Protect rivers and preserve their cultural/historical, ecological, fish and wildlife, recreational, geological, or scenic values.

Forest Plan Goal:

- Increase public awareness of wilderness values. Protect and enhance resources, quality, and wilderness character of designated wilderness areas.

The Revised Forest Plan contains recommendations for wilderness (Clear Lake WSA) and for wild and scenic rivers (4 rivers). Region 8 policy is that legislative EISs for wilderness designation or wild and scenic river designation should not go forward unless there is support for it from the state's congressional delegation and a commitment to introduce a bill into Congress. At this time, there is no indication of support for a wilderness bill in Florida.

Forest Plan Goals:

- Maintain or, where necessary, restore ecosystem composition, structure, and function within the natural range of variability in all ecosystems, with emphasis on longleaf pine-wiregrass, sand pine-oak scrub, pine flatwoods, hardwood/cypress, oak hammock ecosystems, and other imperiled specialized communities.
- Manage floodplains, groundwater, lakes, riparian areas, springs, streams, and wetlands to protect or enhance their individual values and ecological functions.
- Conserve and protect important elements of diversity such as endangered and threatened species habitat, declining natural communities, and uncommon biological, ecological, or geological sites.
- Manage for habitat conditions to recover and sustain viable populations of all native species, with special emphasis on rare species.

There is a need to re-evaluate the management indicator species (MIS) selected to indicate effects of management activities. Some MIS are difficult to monitor and may have limited utility to indicate effects of management activities. With limited funds and personnel for monitoring, the Forest needs to be able to tie the major management activities to species that can be efficiently monitored with a cause and effect relationship to those management activities. The preliminary work for this has been done. The result of the evaluation has not been put into a Forest Plan Amendment.

Demands of the Public and Emerging Issues

Chief Bosworth has identified four emerging issues representing the major threats to national forests today. These include: fire and forest health; invasive species; unmanaged recreation and fragmentation. Although the chief was commenting on threats to national forests across the country these same four threats are relevant here in Florida and often form the basis for discussions with our publics.

Use of fire in the longleaf pine wiregrass ecosystem is integral in the restoration of these systems and in the recovery efforts of the red-cockaed woodpecker. Both winter and growing season burns are being used in these recovery efforts.

Development of the new access system on the national forest is also very timely in light of the national emphasis being placed on unmanaged recreation. Once again we, and our publics, are involved in managing changes here that are also occurring across the country. Unmanaged access on the national forests has been tied to both the invasive species issue and forest fragmentation.

Research Needs

Monitoring efforts during 2003 did not disclose any immediate needs for research efforts to support the implementation and monitoring of the National Forests in Florida Forest Plan. However, additional information on several topics could help managers validate the effectiveness of management efforts and identify potential changes needed in the Forest Plan. The following does not constitute a commitment of funding for these projects.

1. Research to determine how long T&E plant species are able to persist between disturbances in sand pine scrub habitat.
2. Research to evaluate the long-term effectiveness of management techniques for site preparation in Florida scrub jay habitat. Primary techniques which should be evaluated are prescribed burning and mechanical roller chopping.
3. Research to determine habitat variables affecting movement of Florida scrub jay over time. Emphasis may be on spatial constraints as well as potential barriers to movements.
4. Research to determine optimum burning intensities, frequencies and seasons required to return longleaf/palmetto flatwoods ecosystems to conditions existing prior to fire suppression management.
5. Research to determine upland use by adult and juvenile flatwood salamanders.
6. Research to identify impacts of varying degrees and types of habitat fragmentation on flatwood salamanders.
7. Research to evaluate pond management strategies to optimize habitat for flatwood salamanders
8. Research on harvest methods and other options for removal of small diameter wood for hazardous fuel reduction. Research would focus on overcoming barriers that hinder use of biomass and development of markets utilizing biomass for fuel or other purposes.
9. Research current issues related to forest management within the Wildland Urban Interface.

On-Going Research on the forest includes:

1. Identification of visitor needs and perspectives along the Florida National Scenic Trail. This research is in the second year of a five year study being conducted by the University of Florida.
2. The social and biological impacts of use patterns at Silver Glen springs is being conducted by Pandion consultants.

IV. M & E Action Plan

1.0 Actions Not requiring Forest Plan Amendment or Revision:

Action: Solicit support from the Florida congressional delegation for designation of wilderness and wild and scenic rivers recommended in the Revised Forest Plan.
Responsibility: Forest Public Affairs Officer
Status: Carried over from 2002 Monitoring Report
Completion Date: Spring 2005

Action: Complete access designation decisions for the Ocala and Apalach NFs.
Responsibility: Access ID Team, Leadership Team
Status: Carried over from 2002 Monitoring Report. Osceola NF completed. Ocala NF DEIS complete.
Completion Date: Spring 2005

Action: Develop a strategy to improve progress toward the vegetative management objectives of longleaf pine restoration, pine thinnings, uneven-aged harvest methods and sand pine regeneration. This will be accomplished through the 5-year vegetation management plan currently being developed. This plan will identify preliminary projects as well as an implementation schedule for increasing outputs and meeting these Forest Plan objectives.
Responsibility: Ecosystem Staff Officer, District Rangers, District TMAs and Silviculturists
Status: Carried over from 2002 Monitoring Report.
Completion Date: January 2005

Action: Update the GIS database, and appropriate Forest Plan pages (including maps), to reflect Management Area changes due to newly acquired lands which were automatically allocated to the management areas they were surrounded by pursuant to 36 CFR 254.3(f).
Responsibility: GIS Coordinator, Forest Planner, Lands Staff Officer
Status: On-going
Completion Date: On-going

Action: Develop a Forest-wide action plan for treating invasive species based on Regional Guidance.
Responsibility: Ecosystem Staff Officer
Status: Initial proposal
Completion Date: Fall 2005

Action: Develop and implement a strategy to increase the number of RCW groups monitored annually on the Apalachicola Ranger District from approximately 20% of the population to approximately 33% of the population. On the Wakulla Ranger District, accomplish cluster status checks at all (approximately 130) currently active clusters. Accomplish group composition determinations at 50% of the Wakulla clusters annually.
Responsibility: Apalachicola National Forest Biologist, RCW Biologist, USFWS RCW technician..
Status: Tentative strategy developed in cooperation with regional USFWS RCW biologist. First year of implementation in progress.
Completion Date: Ongoing

Action: Develop a strategy for amending the Forest Plan to incorporate lands acquired within the Designated Pinhook Purchase Unit.
Responsibility: Forest Lands Staff Officer
Status: Initial proposal
Completion Date: Spring 2005

2.0 Actions Requiring Amendment or Revision of the Forest Plan:

Action: Prepare a Forest Plan amendment to change the Management Indicator Species and Monitoring Strategy for MIS and PETS.
Responsibility: Ecosystems Staff Officer, Forest Biologists and Botanist, and Forest Planner
Status: Carried over from 2002 Monitoring Report. Preliminary revised list identified.
Completion Date: Fall 2005

Action: Amend the Forest Plan to allocate recently acquired lands for the Florida National Scenic Trail to an appropriate Management Area.
Responsibility: Forest Planner, Recreation Planner, Recreation Staff Officer
Status: Initial proposal
Completion Date: Fall 2005

Action: Amend the Forest Plan to remove Wildlife standards WL-1, WL-2 and WL-3 and replace with direction to follow standards described in the 2003 Red-cockaded Woodpecker Recover Plan.
Responsibility: Forest Planner, Forest Biologist
Status: Initial proposal
Completion Date: Fall 2005

Action: Amend the Forest Plan to remove the portion of Forest-wide objective #17 which identifies the acquisition of 6,500 acres of lands adjacent to the Ocala National Forest.
Responsibility: Forest Lands Staff Officer
Status: Initial proposal
Completion Date: Fall 2005

Appendix A

Interdisciplinary Team Members

Monitoring data were collected by all staff groups in the Forest Supervisor's Office and from the Ranger Districts. The Interdisciplinary Team that assembled the monitoring data, evaluated the results, and recommended changes included:

Name	Discipline
David Harris	Forest Planner
Haven Cook	Recreation Planner
Guy Anglin	Botanist
Will Ebaugh	Hydrologist
Skip Griep	Wildlife Biologist
Joe Ferguson	Fire Staff Officer
Kyle Jones	Lands Program Manager
Rhonda Kimbrough	Forest Archeologist
Kathy O'Bryan	Civil Engineer
Richard Shelfer	Silviculturist
Terry Tenold	Landscape Architech
Bruce Bayle	Air Quality Specialist
Greg Lussier	Forest Interpretive Specialist
Denise Rains	Public Affairs Officer
Kent Wimmer	FNST Coordinator
Bobby Grinstead	Fisheries Biologist