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Forest Service  
Southern Region

*Environmental Assessment for the  
Suppression of Southern Pine Beetle  
within the  
Red-cockaded Woodpecker  
Subhabitat Management Area  
on the Oconee National Forest*



Chattahoochee-Oconee National Forests

November 2001



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# **Environmental Assessment for the Suppression of the Southern Pine Beetle within the Red-cockaded Woodpecker Subhabitat Management Area on the Oconee National Forest**

(Jasper County, Georgia)

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## Abstract:

Southern pine beetle (*Dendroctonus frontalis*) suppression activities are to take place within the subhabitat management area of the endangered red-cockaded woodpecker (*Picoides borealis*) on the Oconee National Forest in Jasper County, Georgia. The area of concern is approximately 18,100 acres, located in the southwest portion of the county. The southern pine beetle kills live southern pine trees that the red-cockaded woodpecker relies on for foraging, roosting, and nesting.

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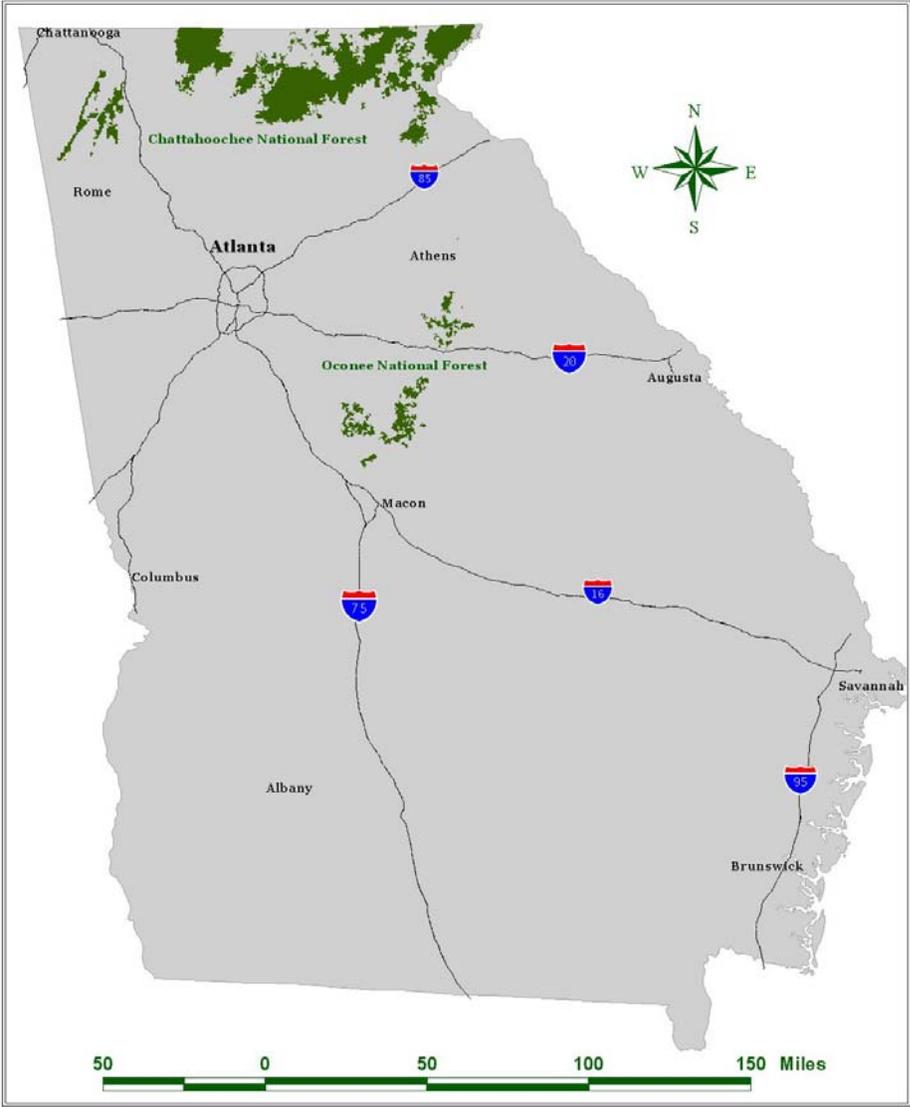
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# CHAPTER 1

## PROPOSED ACTION

The District Ranger of the Oconee National Forest is proposing to undertake actions to suppress southern pine beetle (SPB) (*Dendroctonus frontalis*) infestations to protect and maintain Endangered Species Act-designated critical habitat for the endangered red-cockaded woodpecker (RCW). This proposal covers suppression actions within the Red-cockaded Woodpecker Subhabitat Management Area (Sub-HMA) in Jasper County, Georgia, west of State Highway 11 (see Appendix J, Project Area). These actions would include two methods of suppression to be used singly, or in combination, on each individual infestation: (1) cut and remove and (2) cut and leave. In some areas, depending on the number of infested trees and level of activity, only monitoring (watching) would be needed (see Chapter 2, Proposed Action, for detailed explanations of suppression actions).



Figure 2 – Southern Pine Beetle

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## Need and Purpose

The southern pine beetle is the most destructive insect pest of pine forests throughout the Southern United States. When present in low numbers the beetles attack severely stressed or dying trees and are not of much consequence (a low number means three areas of SPB activity per 1,000 acres). However, during epidemics the SPB attacks and kills even the most vigorous and healthy of pine trees (an epidemic means 10 or more areas of SPB activity per 1,000 acres). The analysis area has a history of repeated SPB infestations that have occurred from every 4 to 7 years since 1991. The proposed control and treatment methods have proven effective at controlling SPB infestations from spreading once control action has been taken. There are no methods that prevent SPB infestations completely (SPB FEIS, 1987). Appendix C, Requirements for Southern Pine Beetle, gives more explanation of SPB optimal conditions.

Figure 3 shows an aerial view of a large SPB infestation. “Yellow-green trees indicate recently infested trees, while reddish trees are older” ([www.srs.fs.fed.us/4501/spb.htm](http://www.srs.fs.fed.us/4501/spb.htm)).



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**Figure 3 - View of Southern Pine Beetle Infestation**

In Figure 4, the photo on the left shows a southern pine beetle attacking a loblolly pine tree. The photo on the right shows pitch tubes on the bark of the tree. Pitch tubes mark the locations where the SPB has entered the tree.



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**Figure 4 - Southern Pine Beetle Attacking Loblolly Pine and Pitch Tubes on Tree Bark**

Figure 5 shows what the SPB does once it is inside the pine tree. The adult beetles produce “winding, S-shaped galleries in the inner bark of the tree, laying eggs as they tunnel. The eggs hatch and the larvae consume the phloem tissue of the inner bark” ([www.srs.fs.fed.us/4501/spb.htm](http://www.srs.fs.fed.us/4501/spb.htm)). The tree eventually will die.

### A Brief History of SPB Situation

On April 11, 2000, the director for the Piedmont National Wildlife Refuge notified staff on the Oconee National Forest that he had found southern pine beetles infesting a RCW cavity tree on the Hitchiti Experimental Forest. A flyover of the forest on April 26, 2000, revealed approximately 30 new SPB infestations, most of them ranging in size from approximately  $\frac{1}{4}$  acre or smaller. Consultation between the Forest Service and the U.S. Fish and Wildlife Service began at that time. Actions were taken that included cut, pile, and burn. Initially this treatment was successful. The forest continued to monitor the SPB activity, and a detection flight in May resulted in finding some 160 additional infestations. By this time, the cut, pile, and burn treatment was not considered to be an efficient treatment because of the cost associated with piling and burning large number of scattered infestations, and there were unfavorable burning conditions. On May 12, 2000, the Acting District Ranger made a decision to cut and leave trees scattered in at-risk RCW clusters, near private property, and in research plots.

On June 20, 2000, the Oconee National Forest signed a decision to apply cut-and-leave and cut-and-remove suppression methods for SPB infestations inside and within  $\frac{1}{2}$  mile of active RCW clusters. In his decision, the Ranger noted a distinct trend of rapidly-appearing and rapidly-growing infestations since the first observation in April. A detection flight on July 18, 2000, revealed there were approximately 1,000 SPB infestations scattered across the Oconee National Forest. The forest is now experiencing an epidemic of southern pine beetle (10 or more areas of SPB activity per 1,000 acres).

This proposal is necessary to control the southern pine beetle epidemic under the guidance according to the *Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle* (SPB FEIS), 1987, on more than 18,000 acres of the Oconee National Forest in order to protect and maintain the critical habitat for the endangered red-cockaded woodpecker. Section 7 (a)(1) of the Endangered Species Act of 1973 requires that Federal agencies, such as the Forest Service, use their authorities to further the conservation of listed species, such as the RCW. Conditions are in place for the potential catastrophic loss of mature live pine trees, which are required components of the RCW’s critically designated habitat (as per ESA at Section 3, # 5A i, ii, B and C). The RCW uses mature live pine trees with heart rot disease for their nests, and it prefers to forage in mature pine forests (Figure 6). Given the current drought situation, excessive heat, the probability exists that SPB activity will increase throughout the summer of 2001 and into



Figure 5 - Southern Pine Beetle Inside Pine Tree

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2002 (see SPB FEIS, 1987; and Forest Service Southern Research Station's website [www.srs.fs.fed.us/](http://www.srs.fs.fed.us/)). This increased activity (i.e., epidemic) could result in the extensive loss of the designated critical habitat for the endangered RCW.



**Figure 6 - Red-cockaded Woodpeckers**

This uncontrolled SPB epidemic threatens the RCW in two ways: (1) mortality of the feeding and nesting habitat of existing birds; and (2) mortality of live pine trees that are, or could soon become, suitable nesting or feeding habitat for RCW population expansion. Together, the direct effect of loss of nesting and feeding habitat and the indirect effect of reducing habitat for future expansion puts more than 10 years of successful RCW recovery efforts and more than 2 million dollars of RCW protection and recruitment efforts at risk (see Chapter 4, Environmental Consequences, Issue C: Economic Effects).

This SPB epidemic creates large areas of standing dead trees within recreation areas and along access roads that pose a serious safety hazard to forest visitors. Uncontrolled SPB infestations adjacent to private property could spread easily into private forested lands. Without suppression, much of the pine tree canopy or tree vegetation cover would fall to the ground within 5 years, creating the potential for wildland fire (see Chapter 4, for more detailed effects analysis).

### **Land Management Plan Direction**

The purpose of this proposal is within the current amended *Land and Resource Management Plan for the Chattahoochee-Oconee National Forests* (Forest Plan) goals. This plan outlines the following management objectives and specific goals that can be achieved by controlling SPB:

1. “Give special consideration to protection . . . of habitat of threatened and endangered . . . species in cooperation with state and federal agencies” (Forest Plan, p. 4-2).
2. “Use Integrated Pest Management (IPM) principles to reduce or prevent long term damage or hazards from forest pests” (Forest Plan, p. 4-2).
3. “Manage fish and wildlife habitats to maintain viable populations of all existing native vertebrate species . . .” (Forest Plan, p. 4-1).

Regulations (36CFR219) that were developed to meet requirements of the National Forest Management Act (NFMA) identify management indicator species (MIS) as one planning tool to be used by the Forest Service to meet NFMA to “provide for a diversity of plant and animal communities.” MIS are selected to reflect the diversity of habitats found on a national forest. (See Chapter 4, Environmental Consequences, Issue A: Biological Diversity; and Appendix G, Management Indicator Species, for more detailed information on MIS.)

### **Decision to Be Made**

The decision to be made by the District Ranger on Oconee National Forest, as the responsible official for this proposal, is:

- Whether to suppress the SPB population by the methods of the proposed action, OR
- Whether to take no action on SPB suppression at this time.

### **Public Involvement**

Extensive public involvement was conducted with the primary objective of discovering and integrating the concerns of the public into shaping the proposed action. Forest Service personnel took the following steps to gather issues from the public.

- Public notification of the southern pine beetle situation began in May 2000 with a number of telephone calls to organizations that expressed an interest in the management of the Oconee National Forest. At the same time, Forest Service personnel consulted with the U.S. Fish and Wildlife Service, Piedmont National Wildlife Refuge, and the Forest Health unit at the Forest Service Southern Research Station. As a result of these early contacts, the Acting District Ranger made a decision to cut and leave trees scattered in at-risk RCW clusters, near private property, and in research plots. This informal public dialogue continued through May and June and culminated in another decision by the Acting District Ranger to use cut-and-leave and cut-and-remove methods of SPB suppression within ½ mile of trees being used by the RCW (Decision Memo, June 20, 2000).

- In June 9, 2000, the Acting District Ranger sent a scoping letter to individuals and groups known to be interested in the management of the Oconee National Forest. The same letter was posted on the Chattahoochee-Oconee National Forests' website: [www.fs.fed.us/conf/sopa/oconee/oconee\\_spb\\_scoping\\_letter.htm](http://www.fs.fed.us/conf/sopa/oconee/oconee_spb_scoping_letter.htm). The letter described the SPB situation that existed then, and still currently exists, on the Oconee, along with a request for comments on the Acting District Ranger's proposal for SPB-suppression activities.
- A press release was published in the *Macon Telegraph* on June 17, 2000, describing the current SPB situation on the Oconee.
- A Public Notice was published in the *Monticello News* on June 22, 2000, giving notice of the Acting District Ranger's decision to suppress infestations of SPB within ½ mile of RCW trees.
- A press release was published in the *Atlanta Journal Constitution* on June 29, 2000, describing the current SPB situation on the Oconee.
- The July issue of *Georgia Outdoor News* published the Oconee National Forest's request for public comments to Acting District Ranger proposal for SPB-suppression activities.
- The EA analysis was completed in September 2000 and letters to 43 individuals were sent on September 21, 2000, explaining the proposal. The letter identified the purpose and need for the project and explained that the EA analysis was available upon request for a 30-day review. The EA analysis was mailed to one individual who had requested it in October 2000.
- A legal notice identifying the purpose and need for the project and explaining that the EA analysis was available upon request for a 30-day review was published in the *Monticello News* in Monticello, Georgia, on September 28, 2000.
- Four comments were received during the 30-day review period from the following: (1) Rene Voss - John Muir Project/Sierra Club, (2) Bryan Bird - Forest Conservation Council, (3) Clanton Black - University of Georgia Research Professor of Biochemistry and Molecular Biology, and (4) Angela and Brent Martin - Forest Watch. Comments are addressed in Appendix K, Comments Received During 30-Day Comment Period.

### **Forest Service (Internal) and Public Issues**

Individuals and groups interested in the management of the Oconee National Forest responded to the June 9, 2000, scoping letter. As a result, six issues were considered significant and are addressed throughout the analysis.

**Issue A: Biological Diversity (Vegetation and Wildlife).** Whether proposed endangered threatened sensitive species (PETS), particularly the red-cockaded woodpecker, management indicator species, locally rare species, and aquatic biota would be adversely affected by the SPB-suppression efforts. How would cut-and-remove treatments be prioritized in relation to the red-cockaded woodpecker? (Moore, Kormanik, Schmidt, Tucker – U.S. Fish and Wildlife Service, Scherubel – Heartwood, Rene Voss – Sierra Club, and Forest Service)

**Issue B: Soils, Wetlands, and Floodplains.** Whether the SPB proposed control activities (such as temporary [use] road construction) would have an adverse effect to soils, wetlands and floodplains, and water. (Forest Service, Martin - Georgia Forest Watch, Scherubel - Heartwood)

**Issue C: Economic Impacts to Ecosystems.** Whether there will be economic effects to surrounding communities within the analysis area brought about by the lack of SPB-suppression efforts. (Forest Service)

**Issue D – Forest Health.** Whether the lack of treatments on the SPB epidemic would affect forest health, increase the risk of wildland fire and meet the desired future condition of the forest. (Kormanik, Moore, Gill, Martin – Georgia Forest Watch, Coone – G&S Wood Products, Forest Service)

**Issue E – Safety.** Whether recreational use and public safety would be affected. (Kormanik, Scherubel – Heartwood, and Forest Service)

### **Issues Considered to Be Not Significant**

The Heartwood organization raised many issues during initial scoping in July 2000. Among those are:

- *Logging is an inappropriate use of public forests* – Commercial timber sale is being considered for SPB control because it is a fast and efficient way to remove trees from the site that are infested with the beetles.
- *Effects on carbon holding capacity* – The cutting down of SPB-infested trees that are dead *and* dying will not affect the carbon-holding capacity.
- *Effects to caves* – There are no caves located within the project area.
- *Timber needs are provided by private lands* – The removal of the SPB-infested trees by commercial logging contractors is a by-product of SPB control activities and does not compete with private land activities by the proposed forest health activities on national forest.
- *Effects on the Indiana bat* – Inventories show that the Indiana bat (*Myotis sodalis*) does not exist within the project area.

- *Loss of oak/hickory component* – There will not be a loss of oaks or hickories *because* only loblolly pine is infested by SPB. Loblolly pine will be the only species cut and/or removed from the site.

Issues that are determined to be nonsignificant such as these are important to the individual. However, they are not considered significant because they are outside the scope of the proposal, are already mandated by law, are not supported by scientific evidence, or are irrelevant to the decision; or the effects are considered to be limited in duration, extent, or intensity.

# CHAPTER 2

## ALTERNATIVES

This chapter describes the range of alternatives or methods proposed to control the southern pine beetle (SPB) within the Red-cockaded Woodpecker Subhabitat Management Area (RCW HMA) on the Oconee National Forest. We will identify the preferred alternative (preferred method) and explain why some alternatives were eliminated from further analysis.

### Alternatives Not Considered in Detailed Analysis

The following concepts were brought to our attention early in the planning process. The Interdisciplinary (ID) Team discussed the concepts; but, for a variety of reasons, the concepts were not considered to be viable alternatives that would meet the proposed goals of the southern pine beetle control project.

1. An alternative involving hatching and releasing natural native enemies of SPB (such as the Clarid beetle/*Thanasimus dubius*) was considered as being particularly appropriate to ecosystem management. However, this alternative is not scientifically proven.



Figure 7 – Clarid Beetle

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2. An alternative of using synthetic attractants (such as “frontalure”) and/or inhibitors (such as “verbenone”) was considered. At the time the *Environmental Impact Statement for the Suppression of the Southern Pine Beetle* was being written (1986), these methods were showing some ability to slow SPB-infestation growth, but they did not stop it. Research since that time at the University of Georgia has not yet demonstrated that this is a viable alternative, at least for a full-scale suppression program. Verbenone is not yet available for commercial use and is not approved by the Environmental Protection Agency (EPA). More research and EPA approval are needed before these tactics would be available for operational use. (See [www.ento.vt.edu/~salom/Verbenone/verbonly.html](http://www.ento.vt.edu/~salom/Verbenone/verbonly.html) for more information on synthetic attractants.)
3. An alternative of using felling, piling, and burning was considered. It can be very effective and is one of the oldest SPB-control methods for small infestations. However, it is not practical as a forestwide control method because it is labor intensive and very costly. Associated costs for cutting, piling, and burning SPB infestations can easily exceed \$1,500/per spot. Environmental constraints for burning cannot always be met, causing the possibility of unreasonable environmental harm, when compared to the other less damaging but still effective control methods available. Currently, Federal and State pollution laws restrict burning on the

Oconee National Forest; and as of July 17, 2001, these laws imposed a complete burning ban for the Oconee National Forest. In addition to this constraint, safety hazards to personnel who conduct the burning was considered. Dead trees that have been vacated by the SPB will be left in place to provide for wildlife habitat. These standing dead trees have a high potential to catch fire during a burn, and/or fall on personnel.

4. An alternative of using an insecticide (such as Lindane) to control the SPB, particularly around RCW cavity trees, was considered. Using insecticides is costly and labor intensive because the bark surface of each individual tree must be thoroughly saturated with the spray AFTER the tree is cut (Alabama Forestry Commission). Additionally, environmental concerns surrounding the use of insecticides on national forest are high. The EPA put the insecticide, Lindane, on restricted use in 1999.

### **Alternatives to the Proposed Action Considered in Detail**

This section describes the alternatives considered in detail. Alternatives represent different ways to accomplish the purpose and need for the proposal, and address the significant issues of the project. Alternatives are compared in terms of their actions.

#### **Alternative 1 - No Action**

This alternative identifies the existing conditions and serves to outline what will happen if SPB continue to be untreated. Under the No Action Alternative no SPB-infested areas would be treated. Based on research and SPB-predicted behavior (SPB FEIS, 1987), SPB would continue to devour the loblolly pines, ultimately destroying the trees. As indicated by a flight in August 2001, the SPB infestations are increasing. More than 1,000 acres of forested land have died or show signs of dying. Given this pattern and SPB-predicted behavior, we estimate more than half of the RCW's critical habitat (more than 9,000 acres) will be impacted by 2002.

Once the trees have died due to SPB infestations, visitor safety hazards and the threat of wildland fire would increase within the Oconee National Forest. Large areas of standing dead trees within recreation areas and along access roads pose a serious safety hazard to forest visitors because standing dead trees could fall to the ground, block roads or cause physical and personal damage. Uncontrolled SPB infestations adjacent to private property lines could spread into private forested lands. We estimate more than one million dollars, which has been invested in improving and reestablishing the SPB, would be lost. (See EA, Chapter 4, for a more detailed analysis.)

**Mitigation and Monitoring Measures for Alternative 1** – Although the agency would not take aggressive suppression action against current and future SPB infestations, impact, to RCW habitat and visitor/user safety would be identified, mapped, and monitored.

## Alternative 2 - Proposed Action

In this alternative, actions would be taken to suppress southern pine beetle infestations in order to protect and maintain 18,113 acres of critical habitat for the Endangered Red-cockaded Woodpecker (RCW) Subhabitat Management Area (Sub-HMA, Forest Plan MA 17) in Jasper County, Georgia, west of Highway 11 (*see* Appendix J, Project Area). These actions would include two methods of suppression to be used singly, or in combination on each individual infestation: (1) cut and remove and (2) cut and leave. In some areas, depending on the number of infested trees and level of activity, only monitoring would be needed. The selection of the method(s) for an individual infestation would depend on the management area involved, management objectives, management direction (including constraints), environmental consequences, and practicality. Approximately 1,000 total spots (approximately 1,000 acres) could be treated by this alternative. A description of the methods and priority of decision follows:

1. **Cut and Remove** - Infested trees and a buffer strip of uninfested trees would be felled and removed from the SPB infestation (Figure 8). The buffer strip would be around the direction of spread for a distance of 1 to 2 times the average height of the trees in the infestation. The amount of trees cut would depend on the size of the infestation. The removal of trees would be accomplished by marking the infested and buffer strip trees, cutting the trees, then skidding the trees using mechanical equipment to a suitable log landing, and loading the trees onto trucks for removal. Past control efforts on the Oconee National Forest and on private forestland within the Piedmont of Georgia show that this is the most effective method for control of SPB and would be used at all times of the year and for most infestations.



Figure 8 - Cut and Remove Method, with Hardwood Trees Left Standing

Areas would be prioritized for cut and remove by the amount of threat to the RCW and its critical habitat (*see* EA, Appendix D, SPB Control in RCW Clusters, for more detailed information on mitigations during RCW breeding season). Priorities for cut-and-remove suppression methods would be:

- Priority #1: SPB infestations that are threatening active RCW clusters and nest trees. These are infestations within mature pine stands in which there are RCW nesting. These mature pine stands are often surrounded by hardwood bottomlands or uplands. Occasionally there may be SPB-infested pine trees within these hardwood stands directly adjacent to active clusters. Infested pine trees within hardwood stands that are within 250 feet of active clusters will also receive top priority. We anticipate 200 acres in this Priority #1 category.
- Priority #2: SPB infestations that are threatening inactive RCW clusters. These are infestations within mature pine stands in which there are no RCW present, but there are cavities (nest sites) suitable for use. There is high potential for the RCW to re-nest in these areas. These mature pine stands are often surrounded by hardwood bottomlands or uplands. Occasionally there may be SPB-infested pine trees within these hardwood stands directly adjacent to inactive clusters. Infested pine trees within hardwood stands that are within 250 feet of inactive clusters will also be cut and removed out of the area. We anticipate 200 acres in this Priority #2 category.
- Priority #3: SPB infestations that are threatening RCW foraging and recruitment habitat. These are infestations within pine and pine-hardwood forest stands 30 years of age and older within ½ mile of a RCW cluster (foraging habitat), and within stands of pine trees 10 acres or larger containing older trees that are designated to provide potential nesting habitat for RCW population expansion (recruitment habitat). Recruitment stands are located from ¼ to ¾ mile of an active cluster or another recruitment stand and have adequate foraging habitat connected to them.
- Priority #4: SPB infestations that are threatening future RCW foraging and recruitment habitat. These are infestations within immature pine stands that will provide the designated critical habitat for RCW expansion, in the future.

The cut-and-remove method **would not**:

- Cut any RCW cavity tree within either an active or inactive cluster unless infested, and then only with the concurrence of the U.S. Fish and Wildlife Service (USFWS).
  - Occur where potentially significant heritage resources could be affected.
  - Occur where such harvest would be inconsistent with the Forest Plan.
  - Cut any hardwood trees unless for safety or physical passage of equipment.
  - Be used on slopes greater than 45 percent, unless an RCW cluster is threatened.
  - Be used in any floodplain or wetland under seasonal conditions that could incur resource damage, or on any highly eroded soil.
2. **Cut and Leave** - Infested trees and a buffer strip of uninfested trees would be felled with their crowns pointed toward the center of the infestation and left (Figure 9). A buffer strip would be created around the direction of spread for a distance of 1 to 2 times the average height of the trees in the infestation. This method is most effective in hot weather (approximately May through October). It is the least effective of the two methods because the SPB does not always die once the tree is cut and has fallen to the ground. More often, if the weather is not hot enough, the SPB will jump from the cut trees onto surrounding healthy trees and continue its destructive behavior. These are called “breakout” infestations. Expanding infestations involving more than 100 active trees are more difficult to stop with cut and leave. Breakouts are more likely to occur for infestations exceeding 100 active trees.

This cut-and-leave method would be used where cut and remove is not practical or permissible under the Forest Plan. Cut trees would be left to decompose naturally in place. These cut trees would add to potential fuels on the forest floor and have the potential to increase wildland fire risk.



**Figure 9 - Cut and Leave Method**

Tools would include (1) a bulldozer to push over sapling trees (20 years old and younger), or (2) chain saws to cut all sizes of trees, or (3) tree-shear or saw-head machines to cut larger trees. Tree-shear or saw-head machinery would be preferred, with the exception noted below, because of their ability to place trees with crowns toward the center of infestation safer and quicker than by using chain saws.



**Figure 10 – Chain-Saw Cutting**

The cut-and-leave method **would not**:

- Cut any RCW cavity tree within an active or inactive cluster unless infested, and then only with the concurrence of the USFWS.
- Cut any tree vacated by SPB unless felling is needed for the safety of the public or of personnel felling infested or buffer trees.
- Use saw-head or tree-shear machinery on any wetland or floodplain during seasonal conditions that would incur resource damage, or on any highly eroded soils, unless an RCW cluster is threatened.

- Cut any hardwood trees unless for safety or physical passage of equipment.

**Mitigation and Monitoring Measures for Alternative 2.** Environmental effects would be mitigated by adhering to the regional and forestwide standards and guidelines (S&Gs) and the State of Georgia’s Best Management Practices. The ID Team reviewed and incorporated by reference the Forest Plan, *Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont* (Veg. FEIS), *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* (RCW FEIS), *Interim RCW Management Guidelines*, and *Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle* (SPB FEIS), and assembled a list of applicable standards and guidelines (see Appendix B - Mitigation Methods and Monitoring, and Appendix E - Monitoring and Evaluation for more details).

- When assessing the need for SPB-suppression activities the forest will recognize the ecological values of SPB-killed trees as brood trees for SPB predators for biological control, for cavity-nesting birds and mammals, and for future large, down woody debris. The forest will leave both individual trees in treated infestations, and individual infestations, when they meet any one of the following criteria: SPB have emerged, either from an individual tree or from all trees in the SPB infestation, therefore, the tree or infestation is vacated and no threat; the infestation has less than 10 infested trees and no freshly attacked trees; and pine host trees are scattered individuals or groups in a stand of trees with a hardwood forest cover type more than 250 feet from RCW clusters.
- Existing temporary use roads would be reopened and used as needed. New temporary-use road construction across stream corridors would be extremely rare and would be considered on a case-by-case basis.
- After infestations are treated, all temporary-use roads would be reopened, ripped, waterbarred, seeded, and closed promptly.
- The project area would be monitored for future breakouts (additional infested trees that occur adjacent to a previously treated infestation) and new SPB infestations. Monitoring will occur during aerial-detection flights. In between flights, field personnel en route to daily work areas will conduct on-the-ground monitoring.
- Breakouts and new infestations would be controlled using one or both of the methods described.
- SPB-control treatments would not cut any hardwood tree, unless for safety or unavoidable passage of equipment.
- In general, SPB-infested pine trees within riparian zones would not be treated, except for special circumstances such as a high threat to an RCW cluster (within 250 feet of a cluster), threats to adjacent private lands, and safety hazards in recreation

areas. These exceptions are extremely limited. In the rare occasion when riparian zones would be accessed by reopening or construction of temporary-use roads, Georgia's Best Management Practices (BMPs) would be followed to mitigate any potential adverse affects to soil and water. Some examples of BMPs include using techniques that minimize soil disturbance (such as pulling trees out with cables), using low ground pressure equipment, using existing temporary-use roads to access infestations, creating equipment limitation zones, and seeding and closing temporary-use roads once control actions are completed.

- SPB infestations that are not treated would be monitored (watched) for increased activity or possible negative effects to other resources or private land. Suppression action (cut and leave or cut and remove) would be taken on some infestations, if necessary.
- All SPB infestations will be screened for heritage resources and proposed, endangered, threatened, and sensitive species prior to any ground-disturbing action (i.e., control actions). (See Appendix E, Monitoring and Evaluation, for detailed screening procedures.)

# CHAPTER 3

## AFFECTED ENVIRONMENT

This chapter describes the existing condition of natural and socioeconomic resources, including aquatic biota, biological diversity (vegetation and wildlife), economics, soil, water, and social factors within the geographic bounds of the project area. These issues are described, and directly linked to the issues identified, in Chapter 1.

**Geographic Bounds for Affected Environment:** The project area is located in Jasper County, Georgia, west of State Highway 11. National Forest System lands comprise approximately 26,937 acres of this area. Of this area, southern pine beetle (SPB)-susceptible stands of trees (pine and pine-hardwood) make up approximately 18,113 acres.

### Issue A – Biological Diversity (Vegetation and Wildlife)

Biological diversity (biodiversity) has been defined as the variety of life in an area, including the variety of genes, species, communities, ecosystems, and processes through which individual organisms interact with one another in their environment. The recent surge of concern over biodiversity is not limited simply to a desire for variety. The practical objective of biodiversity is to ensure that sufficient diversity exists in gene pools, populations, species, communities, and ecosystems to provide for the continued existence of each entity, the potential for future adaptations, and options for future human use.

Those ecosystems, communities, species, and/or gene pools that are at immediate risk of loss should receive the highest priority. These entities are commonly classified as threatened or endangered and are most familiar to us as threatened, endangered, and sensitive species.

Although the different aspects of biodiversity can be subdivided as finely as desired, the most significant parts are (1) species diversity, (2) community diversity, (3) successional diversity, and (4) interaction among elements.

### Species Diversity

The project area is dominated by loblolly pine (*Pinus taeda*), with a mixture of hardwood species including cherry (*Prunus* spp.), dogwood (*Cornus* spp.), elm (*Ulmus* spp.), hickory species (*Carya* spp.), oak (*Quercus* spp.), persimmon (*Diospyros virginiana*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), redbud (*Cercis canadensis*), and yellow poplar (*Liriodendron tulipifera*). The dominant understory species include blackberry (*Rubus* spp.), greenbriar (*Smilax rotundifolia*), Harbison's hawthorn (*Crataegus harbisonii*), honeysuckle (*Lonicera* spp.), muscadine (*Vitis rotundifolia*), and

Virginia creeper (*Parthenocissus quinquefolia*) along with many other forbs and grasses. The Oconee NF is host to approximately 350 species of wildlife and fish and 1,500 species of plants.

### **Community Diversity**

There are four major forest community types in the project area. Loblolly pine makes up the largest percentage with 66 percent. The other three community types include pine-hardwood (1.5%), hardwood-pine (2.5%), and hardwood (30%).

### **Successional Diversity**

This type of diversity refers to the plant and animal communities that inhabit or utilize habitats of different successional stages. Early successional habitats contain dense cover, high fruit and browse production, and complex ground-level structure necessary for many bird species. Late-successional stages produce abundant dens and hard mast and complex structure that improve as forest mature. All successional stages are necessary to maintain diversity.

### **Interaction among Elements**

The project area is bounded by, and intermingled with, private land. This land includes pastures, private woodlots, industrial forested land, home sites, and some small farm acreage.

### **Biological Species Evaluated**

As previously stated, the Oconee NF hosts approximately 350 species of wildlife and fish and 1,500 species of plants. The number of species on the Oconee makes it difficult to manage for every species on every acre. The primary objective with every project is to ensure that viability of any species present is not adversely affected. Several management indicator species (MIS) are represented on the Oconee. MIS represent many ecological communities and associated successional stages within the project area.

There are 20 MIS for the Chattahoochee-Oconee National Forests. Out of these 20, 10 do not occur on the Oconee NF. MIS that do not occur are black bear (*Ursus americanus*), bog turtle (*Clemmys muhlenbergii*), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), Coosa darter (*Etheostoma coosae*), mountain pitcher plant (*Sarracenia purpurea*), rainbow trout (*Oncorhynchus mykiss*), redeye bass (*Micropterus coosae*), ruffed grouse (*Bonasa umbellus*), and yellow lady's slipper (*Cypripedium calceolus*).

The following is a description of the 10 MIS that do occur on the Oconee NF and the condition of their existing habitat. These MIS species are indicative of the major forest types in the project area and respond to changes in community diversity, successional diversity, and plant species diversity.

## Acadian Flycatcher

The habitat for the Acadian flycatcher (*Empidonax vireescens*) consists of deciduous forests near streams. Usually this bird builds its nest in branches directly overhanging streams. It primarily feeds on insects.

Currently, habitat is fairly good, with riparian areas common across the forest and in generally good condition. Population levels have been relatively stable for this species, with surveys showing an increasing trend in abundance statewide during the past 30 years. Riparian habitat is expected to remain constant over time (MIS Population and Habitat Trend, 2000).



## Eastern Gray Squirrel



Eastern gray squirrel (*Sciurus carolinensis*) favors habitat that is mid- to late-successional hardwoods that produce hard and soft mast. This animal is a cavity nester, which utilizes larger diameter hollow trees. It must rely on leaf nests if cavities are unavailable but can use habitat where it occurs, including forest, upland, or riparian areas. It forages in treetops and on the ground.

Squirrel harvest indices and regional assessments indicate that densities have remained stable throughout the region during the last 15 years. However, gray squirrel populations can vary greatly from year to year, depending on hard mast availability (MIS Population and Habitat Trend, 2000).

Currently, habitat levels are low in general, due to the limited acreage of hardwood stands on the Oconee NF.

## Indigo Bunting

The preferred habitat for the indigo bunting (*Passerina cyanea*) includes forest margins, openings and clearings, overgrown fields, and groves. The indigo bunting is not as common in shrubby thickets and hedgerows, because the male favors a few trees within their territories. Deciduous trees are favored over conifers. This bird feeds on seeds and insects gleaned from vegetation on the ground or in shrubs into woods margins up to 15 feet, and usually nests in similar shrubby situations. Forestwide bird survey data shows that indigo bunting populations have been relatively stable during the last decade (MIS Population and Habitat Trend, 2000).



Currently, habitat levels are locally abundant in the project area and on adjacent private land.

### Northern Bobwhite Quail

Favored habitat for northern bobwhite quail (*Colinus virginianus*) is abandoned fields, but habitat is also numerous in hedgerows, thickets, woodland margins (edges), and open woods (usually pine forests). Early, mid-, and late-successional pine forest habitat is utilized as long as it is maintained in open, grassy understory. This bird is a ground nester and feeder and requires small thickets for escape and nesting. It eats seeds, berries, and insects, and benefits from management of RCW habitat.



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Currently, habitat is mostly in fair condition within the project area. Pine stands in general are not as open as required by quail. There are numerous closed and seeded temporary roads and grassed wildlife openings on the Oconee National Forest that are available as feeding areas. Most open habitat is in the form of pastures on private lands adjacent to the national forest.

Although there is evidence of declining populations of bobwhite quail on the forest and throughout the State of Georgia, active management that includes prescribed burning and thinning will benefit quail (MIS Population and Habitat Trend, 2000).

### Pileated Woodpecker



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Pileated woodpecker (*Dryocopus pileatus*) habitat consists of mature (60+ years) and extensive hardwood and hardwood-pine forest. Habitat is deep woods, swamps, or river bottom forests. The pileated woodpecker is also found in rather open, upland forest of mixed forest types. This bird forages and nests on and in snags, with some foraging also occurring on fallen logs and other forest debris. Currently, this habitat is fairly common throughout the project area, especially along larger stream courses. However, older age classes are lacking. This species uses smaller snag trees for nesting.

Population levels reflect habitat limitations by this species occurring at low frequency. Pileated woodpecker populations have been fairly stable on the forest during the last decade, and this trend is expected to continue (MIS Population and Habitat Trend, 2000).

## Red-cockaded Woodpecker

The red-cockaded woodpecker (*Picoides borealis*), an endangered species, currently occupies habitat on the south end of the district and the Piedmont National Wildlife Refuge, which is outside of this project area. It is most abundant on the Hitchiti Experimental Forest (19 active clusters) and the Piedmont National Wildlife Refuge (39 clusters). The aggregate of red-cockaded woodpecker (RCW) clusters on the Oconee NF, Hitchiti Experimental Forest, and Piedmont National Wildlife Refuge constitute one of six areas of concentration within the State of Georgia. This group of approximately 20 active clusters is designated in the RCW recovery plan as a “recovery population.” Under the direction of the RCW FEIS and the Endangered Species Act, the Oconee NF must not jeopardize endangered species and must carry out programs for their conservation (16 USC1536(a)). Therefore, the Oconee NF must protect all cavity trees, protect foraging and nesting habitat, and provide future foraging and nesting habitat within the project area. The recovery objective is to create and protect enough RCW habitat to support a genetically sustainable population of 250 breeding pairs. There are currently seven inactive clusters and several acres of potential recruitment areas for the RCW in the project area.



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This species uses open pinewoods, which can be longleaf pine (*Pinus palustris*), loblolly pine (*Pinus taeda*), shortleaf pine (*Pinus echinata*), or slash pine (*Pinus elliotti*). Habitat is generally of mature trees with little or no midstory (resembling a parklike stand). RCWs nest and roost each day in live pine trees.

Of the 26,937 acres of national forest land within Jasper County, loblolly pine and pine-hardwood areas available for the RCW make up 18,113 acres. The percentage of the 30–60 year old stands in the area is 11 percent. The percentage of future foraging and nesting habitat is 41 percent. The RCW habitat that is 60 years old loblolly pine makes up 47 percent.

Currently, the project area lacks older age pine habitats, which are especially needed for nesting. Potential foraging habitats are fragmented and have thick midstory vegetation, which hinders RCW foraging and increases competition from other vertebrates. There is an abundance of overstocked stands of early to mid-successional stands of pine trees (future foraging and nesting habitat).

## White-tailed Deer

White-tailed deer (*Odocoileus virginianus*) are very adaptable and use many habitat types, including forest, riparian, and early successional habitats.

Currently, population levels are fairly abundant in the project area. Grassed openings and closed temporary



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roads, along with regeneration areas, supply early successional habitats. Habitats for foraging are represented in all forest age classes up to 80 years. Riparian habitats supply much of the hard and soft mast. Abundant early successional habitat also exists on adjacent private lands.

Deer populations are higher on the Oconee (Piedmont) than in the Georgia mountains. The population was at or above carrying capacity, so liberalized harvests have helped reduce densities on Piedmont Wildlife Management Areas (MIS Population and Habitat Trend, 2000).

### Wild Turkey



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Wild turkey (*Meleagris gallopavo*) habitat is most common in bottomland forest where understory is moderate. The wild turkey also occurs in extensive upland hardwood or mixed forest, but less so in pure pine forests. Sometimes the wild turkey forages in open woods, edges, and woodland openings. It nests on the ground in thickets and feeds on the ground. Its primary forage consists of hardwood mast, berries, insects, and vegetable matter.

Habitat is fairly abundant throughout the project area. Older age classes are lacking, but mast-producing trees are fairly abundant as is nesting habitat. There are numerous closed temporary roads that have been seeded where insects and vegetable matter are abundant.

Overall, both nonhabitat and habitat-related factors have contributed to increases in wild turkey population. Wild turkey have benefited from management activities during the past 15 years (MIS Population and Habitat Trend, 2000).

### Yellowfin Shiner and Turquoise Darter

The yellowfin shiner (*Notropis lutipinnis*) and turquoise darter (*Etheostoma inscriptum*) occur in a wide range of habitats, from small to medium streams to small rivers. These fish eat tiny insects from the water surface or suspended in water. Populations are reduced as suspended soil increases in water.



Yellowfin Shiner

U.S. Geological Survey,  
© Noel M. Burkhead

Currently, streams and associated riparian areas are in generally good health. Streams travel through private lands and in many locations do not have a forested riparian area, which results in some detrimental effects, such as increased sediment. (See Soil and Water sections of this chapter for more detailed information). Aquatic population health is unknown outside the Oconee NF.

Based on available data, populations of yellowfin shiner and turquoise darter are in good condition, due to water quality being maintained on the forest (MIS Population and Habitat Trend, 2000).

## Successional Habitats

As the forest ages past 80 years (14%), natural mortality would increase in pines. Hardwoods would begin filling the gaps created by the dead pines, or the canopies of adjacent trees would fill the space vacated by this loss. Depending on the tree species, mortality would increase; and pines, oaks, and hickories would be replaced with more shade-tolerant tree species such as maples and elms, but there would still be some oaks, hickories, and some very long-lived pines. This type of habitat would continue to be replaced slowly over time until natural or human-caused disturbances occur to create early successional habitats.

Table 1 shows the forest types, acreage, and percent in the analysis area.

**Table 1 – Forest Types (Based on Year 2000)**

Forest Type	Acreage	Percent
Pine	17,841	66.0
Pine-Hardwood	344	1.5
Hardwood-Pine	630	2.5
Hardwood	8,122	30.0
	<b>26,937</b>	<b>100</b>

Table 2 shows the age class distribution of early, mid-, and late-successional habitats.

**Table 2 - Age Class Distribution (Based on Year 2000)**

Age Class	Acreage	Percent
<b>Early Successional Habitats</b>		
0-10	1,483	5.5
11-20	3,090	11.5
<b>Mid-Successional Habitats</b>		
21-40	4,321	16.0
41-60	1,847	7.0
<b>Late-Successional Habitats</b>		
61-80	12,305	46.0
80+	3,891	14.0
<b>TOTAL</b>	<b>26,937</b>	<b>100</b>

### Early Successional Habitats

The project area has 17 percent of its forested communities within the 0 to 20 year age class. This includes recently harvested areas, planted or grassed wildlife openings, and areas with young pines and hardwoods, which are approximately from 5 to 10 feet tall, interspersed with herbaceous plants and woody vines and briars. From 10 to 20 years of age the trees would be approximately from 15 to 30 feet tall, and the undergrowth would continue to be similar in structure as it was when the trees were smaller. However, the development of forest canopy will begin to reduce light reaching the forest understory, which will cause a decline in understory plants.

## **Mid-Successional Habitats**

In the year 2000, the project area has 23 percent of its forested communities within the 21 to 60 year age class. Pines and hardwoods are approximately 6 inches in diameter at the 21-year age class and would be from 30 to 40 feet tall. This is a time of rapid height growth in which the shading of the forest floor continues, and there are less and less herbaceous plants and grasses present. At +/- 25 years of age, even-aged stands of pine trees benefit from thinnings to reduce competition for air, water, nutrients, sunlight, and space. Without thinning these young pine plantations, overcrowding occurs and the trees become weak and highly susceptible to disease and insect damage. Woody plants—such as vines, shrubs and sprouting of hardwoods—begin to appear more frequently. Pines, oaks, and hickories begin to bear cones, acorns, and nuts during this 40-year time frame.

During the mid-successional development stages, forest understory forbs and grasses begin to decline, creating a more open (parklike) forest community. This is due to natural mortality, which takes place in the codominant trees from root, shade, and space competition from neighboring trees. The death of some trees then allows some smaller sprouts to develop and grow into the midstory and allows larger dominant trees to continue to grow; this enables the small herbaceous plants to become reestablished. This is due largely to less shading of the forest floor because of openings in the canopy layer, or just that overall, the trees are now taller and cast less direct shade. Some trees, as they reach 50–60 years of age, may begin to develop disease, which mammals or birds may take advantage of by excavating for nesting cavities. Tree growth and vigor are slowing down, and likewise this relates to declining health. At this point, forest managers remove the poor quality trees, leaving the healthier trees, which reduces competition.

## **Late-Successional Habitats**

The project area has 60 percent of the forest communities greater than 60 years in age. The dominant pines and hardwoods would be approximately from 60 to 70 feet tall and greater than 12 inches in diameter. There would be a very well developed midstory vegetation layer below the canopy of the dominant trees. The midstory would shade the forest floor just as the young, developing forest did 40 years earlier, which will limit the number of herbaceous species below the midstory layer. If a natural, growing-season fire regime takes place within these communities, it would reduce midstory vegetation and herbaceous plants would be much more numerous. The dominant trees are now generally growing larger in diameter, but height growth has decreased. Branches are larger, as are the canopies of the trees. There are often fewer trees per acre than there was 20–30 years earlier. Late-successional habitat often contains dead trees standing and on the ground, creating an array of habitat (dens and cover tree cavities) conditions for species of animals that require older forest communities.

## Wildlife Habitat Susceptible to SPB Infestation

The primary pine species susceptible to SPB infestation on the Oconee NF include loblolly pine and shortleaf pine. Natural loblolly pine stands, as well as managed plantations, provide habitat for a variety of game and nongame wildlife species. The primary game MIS that inhabit pine and pine-hardwood forests include bobwhite quail, gray squirrel, white-tailed deer, and wild turkey. Some of these species utilize the habitat associated with loblolly pine through all stages of stand development, while others are attracted for only a short time during a particular stage of development. For example, a loblolly pine plantation can provide forage for deer only from the time of planting to crown closure. Without modifying management practices, this usually occurs in 8 to 10 years. However, thick pine stands can provide deer with cover habitat. Bobwhite quail tend to use the plantation until there occurs a decline in favored ground-level food species. As the habitat deteriorates, deer and quail usually move to mature pine or pine-hardwood forests or to other newly established plantations. Management modifications such as wider planting spacing and early and frequent thinnings will delay crown closure, and periodic prescribed burns will stimulate wildlife food production and lessen the risk of SPB epidemics.

Wild turkeys inhabit upland pine and pine-hardwood forests. They thrive particularly well on large tracts of mature timber with frequent openings and where prescribed burning is conducted.

Pinelands are the chief habitat for some birds such as the pine warbler (*Dendroica pinus*), brown-headed nuthatch (*Sitta pusilla*), and Bachman's warbler (*Aimophila aestivalis*). Older pine stands are very important to the existence of the red-cockaded woodpecker. Large loblolly pine trees are favorite roosting places for many birds, and near some sources of water they may provide an important nest or roost site for ospreys (*Pandion haliaetus*) and bald eagles (*Haliaeetus leucocephalus*) (USDA Silvics, 1990).

Birds and small mammals eat the seeds of shortleaf pine. Squirrels may cut the cones and eat the seeds before the cones open naturally. The canopies of shortleaf pine provide protection from the wind and cold for many animals. Stands of shortleaf pine scattered through hardwood forests are especially beneficial to wildlife. Older shortleaf pines with red heart rot (*Phellinus pini*) are primary nesting trees for the red-cockaded woodpecker (USDA Silvics, 1990).

## Proposed, Endangered, Threatened, and Sensitive Species

There are 106 species (33 federally listed and 73 listed as sensitive) on the Chattahoochee-Oconee National Forests PETS list. From this list, potentially affected species were identified by (1) reviewing their general habitat preferences, (2) consulting records of known locations of PETS species prepared by the Georgia Natural Heritage Program (GNHP) historical records, and (3) consultations with other agencies and universities—as well as reviewing data from Proposed, Endangered, Threatened and Sensitive Species (PETS) Risk Assessment for the Oconee NF, Neotropical Migratory Bird (NTMB) Point Samples, Department of Natural Resources Bald Eagle Flights; Breeding Bird Census Routes, and general observations.

The following PETS species are within the range of the Oconee NF based on a review of the above sources.

### **Bachman’s Sparrow**

Bachman’s sparrow (*Aimophila aestivalis*), a sensitive species, is found in open southern pine forest subject to frequent fires. The specific habitat this species requires is large areas of well-developed bunch grass and herb layer with limited shrub and hardwood midstory. This bird has not been detected in 5 years of bird inventories done on the forest. Reports from the Georgia Department of Natural Resources and PNWR stated



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that they found several RCW sites in the PNWR with Bachman’s sparrow present last year. These areas are south of Compartment 114. Even though this species inhabits an area near the project area, the species is limited within the project area on the Oconee NF.

### **Oglethorpe Oak**

Oglethorpe oak (*Quercus oglethorpensis*), a sensitive species, occurs in Compartment 109. This species generally occupies moist, low-lying sites, which do not contain pine trees. There are two known locations within Compartment 109 that are in upland locations with pine tree forest.



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### **Red-cockaded Woodpecker**

This federally listed endangered species was previously described under the MIS section of this chapter.

### **Sherman’s Fox Squirrel**



Source Unknown

Sherman’s fox squirrel (*Sciurus niger shermanii*), a sensitive species, occurs throughout the Piedmont of Georgia and South Carolina. This subspecies prefers longleaf pine, loblolly pine, and pine-hardwood mixed stands with an open midstory and a forest floor that is nearly bare (Loeb and Moncrief, 1993). The fox squirrel is also a game species, which is legally harvested in Georgia. Although hard mast is its main food source, when acorns and hickory nuts are not abundant it becomes dependent on seeds and fruits of other trees (sweetgum, basswood, hawthorn, maple, and pines). Dr. Josh Larem, a

professor and biologist, identified some fox squirrels in Jones and Putnam counties as the subspecies known as Sherman’s fox squirrel. The fox squirrel and its habitat occur throughout the project area.

## Locally Rare Plants

From a list of 90 plants occurring on the Chattahoochee and Oconee NFs' locally rare plant list, the Georgia Natural Heritage Program (GNHP) indicates the Carolina anemone (*Anemone caroliniana*), dwarf palmetto (*Sabal minor*), pink lady's slipper (*Cypripedium acaule*), and southern twayblade (*Listera australis*) occur within the project area in Jasper County. The identification of dwarf palmetto has been recorded in plant surveys done in 1998 and general observations in 1999 and by the district biologist in 2000. The other locally rare plants are either not within the project area, or habitat does not exist within



Southern Twayblade

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the project area. The Chattahoochee and Oconee NFs' locally rare animal list was also reviewed, and the GNHP did not list or have available the information to show any of the locally rare species within the project area (Jasper County). After reviewing the list of locally rare fish (19), mollusk (1), mammals (6), reptiles and amphibians (7), insects (1), and birds (12) (totaling 46 species) from the Chattahoochee-Oconee, no known occurrence of these species was found in the data occurrence records.

## Aquatic Biota

The aquatic species found on the Oconee NF include redbreast sunfish (*Lepomis auritus*), yellow bullheads (*Ameiurus natalis*), snail bullhead (*Ameiurus burnneus*), creek chubs (*Semotilus atromaculatus*), silver redhorse (*Moxostoma anisurum*), Christmas darter (*Etheostoma hopkinsi*), and coastal shiner (*Notropis petersoni*). Eels (*Anguilla rostrata*) and chain pickerel (*Esox niger*) are also found in the area.

Sediment exists within the project area streams. This sediment has accumulated in the streams from more than 100 years of extensive and destructive farming techniques of the 1800s and early 1900s. The aquatic species that now exist in the project area streams are a direct result of the existing (inherited at the time of becoming a national forest) sedimentation. Sedimentation does have the potential to limit reproduction of aquatic species and can inhibit aquatic insect populations. Sediment in streams is natural, but human activities—such as road construction, agriculture, and off-road vehicle use—can accelerate sediment levels if certain mitigation measures are not followed. Existing road density within the project area is high, and these roads can serve as a major sediment source affecting aquatic habitat. Silt and streambed load are naturally moved in streams particularly during high water flows. Healthy streams can handle some silt without negatively affecting fish or invertebrates. The streams are healthy in the project area.

The Forest Plan for the Chattahoochee and Oconee National Forests includes standards and guidelines designed to reduce or prevent sediment from entering streams and to maintain the hydrologic function of floodplains and wetlands. Some examples of these standards and guidelines include: using Georgia's Best Management Practices (BMPs) to establish "no equipment zones" around riparian areas, utilizing existing roads to access infestations, and seeding and closing all temporary use roads once control actions are completed.

Oconee NF 2000 management indicator species population trend data shows that these BMP measures are effective. Based on available data, Oconee NF populations of yellowfin shiner and turquoise darter (aquatic MIS) are in good condition within the small riverine streams where they occur (MIS Population and Habitat Trends, 2000).

No listed Oconee NF proposed, endangered, threatened, and sensitive fish or mussel species were found within the project area during recent 1995 and 1998 surveys. Although no PETS species were detected in stream surveys, the potential habitat does exist. The Altamaha shiner (*Cyprinella xaenura*) is a PETS fish species that prefers rock and sandy pools of creeks and small rivers. The Ocmulgee River within the project area could host this species. The inflated floater (*Pyganodon gibbosa*) is a PETS freshwater mussel species living in soft mud and sand generally in slow-moving water. The Ocmulgee River, within the project area, could host this species as well.

## **Issue B – Soils, Wetlands, and Floodplains**

The soil and water analyzed in project area is within the Piedmont Plateau of the Piedmont physiographic region.

### **Soil**

The soils of this area were formed in place (residuum) from the underlying metamorphic bedrock. Examples of bedrock include granite, gneiss, hornblende gneiss, and mica schist. Soils of the area generally have clayey textured subsoils and loamy surfaces (*see* Appendix I, Soils of the Project Area).

### **Water**

Much of the land area managed by the USDA Forest Service on the Oconee experienced severe erosion during the 1800s and early 1900s, due to lack of conservation practices during intensive farming. As a result, millions of tons of soil were washed into the streams in the area of the Oconee NF, destroying water-related species. In the 1930s when the Soil Conservation Service and then the Forest Service obtained the land, there occurred conservation methods such as tree planting, gully removal, soil restorations, gabion installation, and reintroduction of aquatics. These practices continue today, reducing additional sediment loads into streams.

The Oconee NF land area south of Interstate 20 in Jasper, Jones, and Putnam counties drains into three major watersheds—the Ocmulgee River, Little River, and Murder Creek. The Ocmulgee River Watershed drains about one-half of the land area, flowing west through several named perennial streams into the main stem of the river. Named perennials within this watershed include Kinnard Creek, Wise Creek, Gladesville Creek, Falling Creek, and Harmon Pye Branch. The Environmental Protection Division - Georgia Department of Natural Resources (GA DNR-EPD) has classified each of these

streams with a beneficial use of fishing. The Ocmulgee River itself flows out of Lake Jackson near Georgia Highway 16 before reaching Forest Service ownership in Jasper County.

Road construction, power line installation and land clearing continue on private land. The impacts of these activities on national forest lands are unknown but are monitored closely.

### **Issue C – Economic Impacts to Ecosystems**

There are more than 1,000 SPB infestations identified on the Oconee NF. These infestations range in size from only a few trees covering less than one-tenth of an acre, to several thousand trees covering ten+ acres. Pine trees within these infestations already have been (or will soon be) killed, and the pine trees throughout the rest of the analysis area are at risk. In the Southern United States, SPB has generated an estimated \$901.8 million of timber loss and suppression costs from 1960 to 1990. More recently, losses in 1995 alone were estimated to be \$350 million (USDA Forest Service, 1995).

At risk is the Oconee NF's red-cockaded woodpecker recovery program. Since 1991, major investments of time, money (more than \$2 million) and resources have been put in place to ensure the recovery of the endangered red-cockaded woodpecker on the Oconee NF. If not treated, more than 9,000 acres of the RCW habitat will be destroyed by December 2001.

The untreated SPB infestations pose a threat to developed recreation areas, including recreation-fee demo sites. It is difficult to apply possible economic effects from SPB infestations to aesthetic values that people place on these recreation areas.

From October 1999 to October 2000, SPB generated an estimated \$2.5 million in damage (known suppression costs and timber loss) on the Oconee NF. The forest did not salvage the majority of the SPB-infested trees. We are unsure of the economic or aesthetic value(s) of pine trees on private lands adjacent to national forest lands.

### **Issue D – Forest Health and Issue E - Safety**

The evidence of dead loblolly pine trees throughout the project area places all recreation facilities at risk of being affected.

There are approximately 16 miles of developed hiking trails (Kinnard Creek Trail and Ocmulgee River Trail) within the project area that receive light to moderate use, as well as a small amount of dispersed hiking that occurs on the remainder of the forest. A moderate amount of horseback riding occurs on both trails.

Hunters heavily use the forest and the project area, especially during deer season. There are approximately 22 dispersed hunt camps within the project area (on National Forest

System lands in Jasper County, west of State Highway 11), which are nearly always occupied during hunting seasons. There is also a moderate amount of recreation interest at the Wise Creek Hunt Camp year-round, where access to the Ocmulgee River is provided for canoes and kayaks.

The potential for catastrophic wildland fires has increased as the majority of last year's SPB infestations have been cut and left on the ground, or have not been treated, creating standing snags. This has increased the wildland fire hazard to national forest and private lands.

# CHAPTER 4

## ENVIRONMENTAL CONSEQUENCES

This chapter describes the environmental effects of Alternative 1 - No Action and Alternative 2 - Southern Pine Beetle Control. This chapter also analyzes each of the issues identified in Chapter 1.

**Geographic Bounds for Analyzing Environmental Consequences:** The general geographic bounds of the project are the Red-cockaded Woodpecker Subhabitat Management Area (sub-HMA) in Jasper County, Georgia, west of State Highway 11 on the Oconee NF, with the exception of Management Area 13 (Monticello Bottomland Hardwoods). National Forest System lands comprise approximately 26,937 acres of this area. Of this, southern pine beetle (SPB)-susceptible stands of trees (pine and pine/hardwood) make up approximately 18,113 acres.

Geographic bounds for social effects (recreation, wildland fire risk, and public safety) analysis will be the 18,113 acres of pine and pine-hardwood stands where the individual SPB infestations occur. Areas include all locations where ground disturbance could take place caused by heavy equipment during SPB-suppression treatments.

Biological diversity (vegetation and wildlife) and water effects will be assessed for the 26,937 acres and for the Ocmulgee River Watershed south of Georgia Highway 16 and west of Georgia Highway 11. Soil effects will be assessed for the 26,937 acres of national forest lands, and more specifically at any SPB-infestation location and where any temporary use roads are opened. Economic effects will be assessed for the 26,937 acres of national forest lands, and for surrounding private land and communities.

**Time Bounds for Analyzing Environmental Consequences:** The effects to the issues—including social effects (recreation, wildland fire risk, public safety) and soil and water resources—will be assessed for the period from 2001 to 2005, the approximate length of the current SPB epidemic.

The effects on biodiversity/wildlife related to the chosen action will be assessed for the period from 2001 to 2009, or as long as it takes to ensure that the RCW population is stable or increasing, or until which time monitoring shows that there will no longer be a potential for negative effects to aquatic habitat.

To address the economic effects for multiple resources and past investments, the time bound will be extended back 10 years to 1991. On the front end, the time bound will remain at 2005 (the approximate end of the current SPB epidemic).

## Alternative 1 - No Action

This alternative serves as a baseline for environmental analysis. Each issue is analyzed against current conditions.

### Issue A – Biological Diversity

#### Management Indicator Species

There are 20 management indicator species for the Chattahoochee-Oconee NFs. Out of these 20, 10 do not occur on the Oconee NF. MIS that do not occur are black bear (*Ursus americanus*), bog turtle (*Clemmys muhlenbergii*), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), Coosa darter (*Etheostoma coosae*), mountain pitcher plant (*Sarracenia purpurea*), redeye bass (*Micropterus coosae*), rainbow trout (*Oncorhynchus mykiss*), ruffed grouse (*Bonasa umbellus*), and yellow lady's slipper (*Cypripedium calceolus*). (Refer to Table 5, page 43, for summary of effects to MIS by both alternatives.)

#### *Acadian Flycatcher*



The primary habitat for this species includes riparian corridors composed primarily of deciduous tree species. Typically these riparian zones on the Oconee NF contain only scattered pine trees. Lack of SPB control would not affect this species or its preferred habitat.

#### *Indigo Bunting*

Dying trees caused by SPB eventually would create early successional habitat. Habitat for this species would therefore be expected to increase over time. The no action alternative would produce open areas with forest edge, which would attract this species.



#### *Eastern Gray Squirrel*



The project area is composed of 32.5 percent hardwood or hardwood pine mix. The hardwood component would increase with the lack of competition from adjacent pine in the SPB-infested area. Because of the limited hardwood component, gray squirrel abundance in the project area is generally low and would remain low in this alternative.

### ***Northern Bobwhite Quail***



Untreated SPB pine stands eventually would result in dead and dying pine trees throughout the project area. This would result in creation of some early successional habitat that favor quail. However, the thick understory brush resulting from falling dead timber would not create ideal habitat for quail if the areas remained unmanaged. Quail prefer open, grassed areas without thick cover to impede their movement and foraging activities on the forest floor.

### ***Pileated Woodpecker***

Pileated woodpeckers need large (16 inches and larger) dead trees for nesting and feeding. The hardwood component in the project area is low at approximately 32.5 percent. The hardwood component would remain the same as that under the no action alternative. Nesting and foraging habitat would be maintained in this alternative.



### ***Red-cockaded Woodpecker***



The consequences of southern pine beetle invasion and control are outlined in the *Final EIS for the Suppression of the Southern Pine Beetle in the Southern Region* (RCW FEIS) in February 1987. That document tiers to the red-cockaded woodpecker recovery plan, noting the importance of protecting existing active clusters and providing habitat for expansion.

**Guidelines Common to both Alternatives:** Effects on RCW should be minimized, because the tentative sub-HMA is subject to the interim guidelines set by the RCW FEIS. This has been added as Amendment 17 to the Forest Plan of the Chattahoochee-Oconee NFs. The majority of the area is allocated in management areas 16 and 17, which are managed as general forest and habitat for the RCW, and which include:

1. Three-quarter and one-quarter mile zones will be established for all active, inactive, and abandoned clusters. Replacement stands will be provided for each cluster thus designated.
2. On the remaining land, one recruitment stand—including nesting habitat and adequate foraging habitat—will be established in each compartment containing adequate acres in suitable forage types. Adequate foraging habitat will be based on analysis of foraging-habitat acre equivalents.
3. Recruitment and foraging habitat will be mapped and the information retained in each compartment folder.

Under Alternative 1, opportunities to expand the number of RCW clusters would be lost if the SPB killed potential cavity trees and suitable-foraging habitat trees. Some inactive clusters with suitable habitat could be reoccupied by RCW; these stands remain vulnerable to destruction if SPB infestations occur in these sites. Finally, cluster abandonment and nesting failures would occur and adjacent clusters may be destroyed.

Indirectly, allowing SPB infestations to destroy potential RCW habitat would counter the effects already implemented to recover RCW populations. Because of SPB infestations in suitable habitat, the attainment of overall goals for this endangered species would be setback 20 years.

Over time, habitat of older stands killed by the SPB would be replaced by new stands that are less susceptible to SPB attack for a period of years. Risk of insect and disease damage would be reduced as stand vigor improves in this new stand. Naturally regenerated stands that have an increase in hardwood species may also have a reduced susceptibility to SPB attacks. RCW could not utilize these new stands for at least 30 years.

### ***Turquoise Darter and Yellowfin Shiner***



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Yellowfin Shiner

These species are commonly found in most of the small to medium-sized streams in the project area. The riparian zones through which these streams flow are composed primarily of hardwood tree species, which would not be affected by SPB infestations. The majority of these riparian zones also contains a pine component, which in some locations may result in some loss of

shading to the streams (resulting in increased water temperatures) and SPB-killed pine trees falling into the water over time (resulting in altered habitat and some sediment increase). A lack of SPB-control treatments would not affect these species.

### ***White-tailed Deer***

The amount of late-successional habitat would decrease and early successional forest types would increase in this alternative. Forage and cover habitat for deer is present within the project area and would be maintained in this alternative.



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### ***Wild Turkey***



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The effect of no action would provide some habitat for the wild turkey. Existing mast-producing species would remain. Young stands of released hardwood trees eventually would produce hard mast. Wild turkey's diet includes 90 percent plant food. The turkey is a very adaptable species and able to feed in a variety of habitat. This alternative would not affect the wild turkey.

## **Proposed, Endangered, Threatened, and Sensitive Species and Locally Rare Species**

No treatment for the protection of habitat for PETS plant and wildlife species and locally rare species. This alternative would adversely affect the foraging and nesting habitat for the RCW. Some cluster and recruitment sites would be eliminated, and the loss of cavities and potential cavities would occur. Therefore, this alternative would not be in compliance with the SPB FEIS, RCW FEIS, or the Endangered Species Act (ESA) if the SPB epidemic were to continue.

### **Aquatic Biota**

See turquoise darter and yellowfin shiner effects under management indicator species heading on previous page. There would be no effects to aquatic biota due to no SPB-suppression action taken.

### **Issue B – Soils, Wetlands, and Floodplains**

Small amounts of erosion may be created from SPB infestations, as dying trees fall to the ground. This sediment would move short distances before being trapped by downed logs or brush. Negligible sediment contribution to creeks or rivers is expected from this situation.

The only noticeable exception would be directly linked to dead and down woody materials. This fuel loading increases the potential for a large area to be burned over, resulting in the loss of soil cover and accelerated sheet and rill erosion.

Overall, soil runoff or erosion is not anticipated to increase unless a catastrophic wildland fire occurs in the area. This natural erosion would add approximately 24 tons of sediment (about two dump truck loads) to creeks, rivers, and streams annually.

Effects would continue to occur from existing roads, past land uses, and activities on adjacent private lands or within watersheds within the project area.

### **Issue C – Economic Impact on Ecosystems**

Under the no action alternative, there would be several impacts. We would be only monitor SPB infestations. Direct project costs would be the amount required for this monitoring, which would include both on-the-ground surveys and aerial-detection costs (approximately \$550/hour of flight time). During an SPB epidemic, detection flights are often made every 2 weeks and would require approximately from 2 to 3 hours to cover the analysis area. On-the-ground monitoring costs also would be expected to increase as more infestations are found, especially if other resources continue to be at risk and more frequent monitoring is required.

The forest would continue to lose hundreds of thousands of dollars as a result of the loss of trees by SPB. Also, more than \$2 million would be lost in RCW and associated habitat work, which includes efforts to reestablish the RCW and restore acceptable foraging habitat. Monitoring the spread of SPB epidemic has cost the forest thousands of dollars. At risk would be more than 10 years of successful RCW recovery, protection, and recruitment efforts. The attainment of overall goals could be delayed for this endangered species.

In addition to national forest RCW recovery program losses, the Piedmont National Wildlife Refuge's RCW recovery program would be at risk. If the national forest RCW population declined or was eliminated, the PNWR population could be genetically isolated. Therefore, an indirect effect would be the possible delay of the PNWR's RCW recovery program and a potential loss of \$945,000 of the PNWR's RCW recovery program investments (Elizabeth Caldwell, personal conversation with Ronnie Shell, Director of PNWR, 2/7/01.)

If no suppression actions were taken on the currently identified SPB infestations in the project area, eventually there would be a loss of timber investment. This alternative would represent a loss of an estimated \$2,100 per acre (current estimated market rate of \$300/MBF for yellow pine sawtimber with an average of 7 MBF/acre) if SPB-infested acres were not salvaged (minus sale preparation and administration costs). SPB losses in poletimber can amount to as much as \$150 per acre (current estimated market rate of \$10/CCF for yellow pine pulpwood with up to 15 CCF/acre). These calculations are used to estimate financial losses on a known amount of timber, for example, an SPB infestation of known size. There are no estimated losses, which may occur from the spread of untreated SPB, calculated.

From October 1999 to October 2000, SPB generated an estimated \$2.3 million in timber loss on the Oconee NF. During that time most SPB-infested trees were cut and left in place and not salvaged.

#### **Issue D – Forest Health and Issue E – Safety**

Three key impacts would occur as a result of implementing the no action alternative. The first and most obvious effect would be the degradation of the visual quality; this meaning it will not look like a green healthy forest, but a jumble of dead and dying trees that have fallen down or are standing dead. Many visitors will experience a dead and dying forest.



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Second, safety of visitors is a concern. As pine trees die, they lose limbs and eventually fall over in windy conditions. This presents a safety hazard to visitors along roads and in high-use areas where pine is the predominant over-story.

Third, large areas of dead trees would fall to the forest floor, adding to the buildup of available fuels for wildland fire. The buildup could reach as high as 100 tons per acre. If a wildland fire should occur in SPB infestations in the recreation areas, it could result in total devastation of entire ecosystems. Additionally, areas beyond the existing SPB infestations would be affected by fire, resulting in the possible destruction of facilities, private property, degradation of the visual quality, increased erosion, and sedimentation of streams.

There will be significant effects to dispersed recreation use or visually related forest use in the present and into the future if this alternative is implemented.

## **Alternative 2 - Southern Pine Beetle Control (Proposed Action)**

In this alternative, the proposed actions and issues are analyzed and compared against Alternative 1.

### **Issue A – Biological Diversity**

Direct effects of all control methods on various wildlife species would be the disruption caused by human activity. This would cause temporary, local disturbance of wildlife. Depending on individual wildlife species, cutting associated with SPB control could have positive or negative impacts on certain preferred habitats. Species that require a more mature forest habitat would be more affected than those species that require habitat provided by plant communities in early stages of plant succession.

Indirect or cumulative effects associated with SPB control techniques would be typical of the impact on wildlife species and habitat associated with naturally-occurring disruptions of plant communities.

### **Management Indicator Species**

As previously stated, there are 20 (10 do not occur on the Oconee NF) management indicator species for the Chattahoochee-Oconee NFs.

#### ***Acadian Flycatcher***

Acadian flycatcher habitat would be maintained under this alternative. SPB control measures would not be expected to impact Acadian flycatcher habitat, as hardwood trees are not attacked by the SPB. In the rare occasion when riparian zones would be accessed by reopening or construction of temporary use roads, Georgia's Best Management Practices (BMPs) would be followed to mitigate any potential adverse effects.

Population levels of Acadian flycatchers have been shown to be relatively stable on the Chattahoochee and Oconee NFs during an 8-year period, and surveys have shown an in-

creasing trend in abundance statewide during the past approximate 30-year period (Management Indicator Species Population and Habitat Trends, p. 44). Cumulatively, past and present forest management projects (such as previous SPB epidemic control, prescribed burning, and timber harvests) are compatible with sustaining Acadian flycatcher habitat and population numbers on the Oconee NF.

### ***Eastern Gray Squirrel***

SPB control would maintain eastern gray squirrel habitat. Mitigation measures would protect any hardwood mast and fruit trees during suppression activities under this alternative. Habitat for the eastern gray squirrel would remain the same in this alternative.

Data from the Chattahoochee-Oconee National Forests 2000 Management Indicator Species Population and Habitat Trends report (p. 36) demonstrates that gray squirrel densities have remained very stable throughout the region during the last 15 years. Cumulatively, past and present forest management practices (including prescribed burning, timber harvest, and SPB control treatments) are compatible with maintaining eastern gray squirrel populations on the Oconee NF. An increase in habitat capability is expected as hardwood forests mature in the future.

### ***Indigo Bunting***

Habitat for the indigo bunting would increase under this alternative, although across a smaller area and at a much faster rate than Alternative 1. The indigo bunting primarily inhabits forest edge and young forests. Cutting SPB-infested trees and buffers would provide additional forest edge and early successional habitats faster than if SPB-infested trees were to die and fall naturally. Both alternatives would create the desired forest edge and early successional forest that this species prefers; the only difference is Alternative 2 would create this habitat at a much faster rate, and across a smaller area.

Bird survey data demonstrates that indigo bunting populations have been relatively stable on the forest during the last decade, as have the shrub-seedling successional habitats favored by this species (Management Indicator Species Population and Habitat Trends, p. 63). Cumulatively, past and present forest management practices (such as past timber harvest, prescribed burning, SPB epidemics, and control treatments) are compatible with sustaining indigo bunting populations on the Oconee NF. Expected tree thinning projects to provide critical habitat for the RCW, coupled with prescribed burning, and openings created by natural disturbances should be adequate to ensure continued viability of indigo buntings on the forest.

### ***Northern Bobwhite Quail***

SPB control activities would increase quail habitat, but at a much faster rate than the no action alternative. Quail uses the 0–10 age class (early successional habitats), which would be created much faster by control treatments, than if the SPB-infested trees were to die and fall naturally. Cut-and-leave-SPB-infested trees would leave additional ground-

cover for nesting. The cut and removal of SPB-infested trees eventually would create foraging habitat, as early successional species take root in the openings. SPB control measures would increase the habitat for the bobwhite quail.

Based on bird survey data, quail population numbers shown no drastic changes and numbers remain low during the last 10 years on the forest (Management Indicator Species Population and Habitat Trends, p. 33). On the Oconee NF, population numbers are estimated to fall within the Forest Plan minimum and maximum levels (from 1 per 25 acres to 1 per 100-acre range). Cumulatively, past and present forest management practices (such as prescribed burning, past timber harvests, and SPB control treatments) are compatible with maintaining quail populations on the Oconee NF.

### ***Pileated Woodpecker***

SPB control would maintain the pileated woodpecker's preferred hardwood habitat. SPB control treatments would not cut any hardwood tree, unless for safety or passage of equipment (see Appendix B, Implementation). Hardwood forests in the project area would be maintained under this alternative. Both alternatives would result in abundant snags, but Alternative 2 would result in less snags.

Bird survey data demonstrates that the pileated woodpecker populations have been relatively stable on the forest during the last decade (Management Indicator Species Population and Habitat Trends, p. 65). There has been an increased in the availability of older hardwood forest habitats favored by this species, and this trend is expected to continue as the forest ages. Cumulatively, past and present forest management projects (including prescribed burning, timber harvests, SPB epidemics, and control treatments) are compatible with sustaining pileated woodpecker populations on the Oconee NF. Under either alternative, stable to increasing populations of pileated woodpeckers and continued viability are expected on the forest.

### ***Red-cockaded Woodpecker***

Alternative 2 would minimize the loss of RCW habitat and would protect existing habitat and clusters. This alternative would limit SPB infestations to smaller areas and thus impact less RCW habitat. This would be accomplished by treating individual SPB infestations as quickly as possible following detection, prioritization, and clearance for heritage resources and PETS.

Cutting SPB-infested trees would remove some foraging substrate and future potential nesting habitat for the RCW within the treatment areas. However, if SPB-infested trees are not removed from the site, there could be greater numbers of foraging substrate and potential nesting trees destroyed. Treatment of SPB-infested trees may adversely affect the RCW habitat within the treatment area if live, uninfested pine trees are felled as part of buffer strips due to reduced foraging habitat. Increased human activity associated with control actions may temporarily disturb RCWs within some clusters. The two methods of SPB suppression would have similar effects on RCW foraging and nesting, when used in their appropriate situations.

U.S. Fish & Wildlife Service written concurrence for the finding of “not likely to adversely affect the RCW” was received on January 22, 2001, for the proposed action under Alternative 2.

### ***Turquoise Darter and Yellowfin Shiner***

In general, SPB control treatments would not occur within riparian areas. Although this policy may result in loss of stream shading and SPB-killed pine trees falling into the water over time, changes to stream habitat would be minor. In the rare occasion when riparian zones would be accessed by reopening or construction of temporary use roads, Georgia’s BMPs would be followed to mitigate any potential adverse affects to streams.

Based on available data, Oconee NF populations of the yellowfin shiner and turquoise darter are in good condition and are being maintained within the small riverine streams where they occur (Management Indicator Species Population and Habitat Trends, p. 60). Past and present forest management practices (including prescribed burning, timber harvests, and SPB control treatments) are compatible with maintaining good populations of yellowfin shiner and turquoise darter on the Oconee NF.

### ***White-tailed Deer***

SPB control treatments would maintain white-tailed deer habitats.

Deer densities generally range from 20 to 60 deer per square mile in the Piedmont (Management Indicator Species Population and Habitat Trends, p. 16). Populations have been very stable on the Cedar Creek Wildlife Management Area. At present, white-tailed deer population densities for the Oconee NF are much higher than the maximum level objective (25.6/square mile) displayed in the Forest Plan. Cumulatively, past and present timber harvests, prescribed burning, SPB control treatments, and epidemics are compatible with maintaining stable deer populations on the Oconee NF.

### ***Wild Turkey***

SPB-control treatments would continue to maintain turkey habitat. Existing mast-producing species (hardwoods) would remain in this alternative as the SPB does not attack and kill hardwood trees. Some pine roosting trees may be lost, but the extent of that loss is less than Alternative 1, as the spread of SPB is controlled. Alternative 2 would maintain wild turkey foraging and roosting habitat.

The Forest Plan objective calls for 4.6 turkey per square mile with a minimum level population of 2.3 and a maximum population level of 10 per square mile. Densities of about 10–16 turkeys per square mile were reported for the Oconee NF from the Georgia Wild Turkey Status Report 1998 (Management Indicator Species Population and Habitat Trends, p. 23). Data from the Chattahoochee-Oconee National Forests 2000 Management Indicator Species Population and Habitat Trends report demonstrates that wild turkey populations have increased on the forest during the last 15 years. Cumulatively, past,

present, and future management practices (including prescribed burning, timber harvests, and SPB control treatments) would likely contribute to maintaining stable populations of wild turkey on the Oconee NF.

**Summary of the Effects of Alternatives on the Projects MIS**

There are no cumulative effects from external factors (such as private land timber harvests) that would be expected to change any MIS population trends on the Oconee NF.

Biological effects on MIS are summarized in Table 3. This table illustrates there is little difference in effects to MIS between alternatives, except for the RCW, for which the no action alternative would be detrimental. Avoiding this detrimental impact is the purpose of Alternative 2 (see Chapter 1).

**Table 3 - Effects of Alternatives on Project MIS**

Management Indicator Species	Habitat Objectives	Alternative 1	Alternative 2
Red-cockaded Woodpecker	Increase	Decrease	Maintained
Pileated Woodpecker	Maintain	Maintained	Maintained
Acadian Flycatcher	Maintain	Maintained	Maintained
Indigo Bunting	Increase	Enhanced	Enhanced
Northern Bobwhite Quail	Increase	Enhanced	Enhanced
Wild Turkey	Increase	Maintained	Maintained
Gray Squirrel	Maintain	Maintained	Maintained
White-tailed Deer	Maintain	Maintained	Maintained
Turquoise Darter	Maintain	Maintained	Maintained
Yellowfin Shiner	Maintain	Maintained	Maintained

**Summary of Neotropical Migratory Bird Effects**

The cumulative effect of SPB control in the project area might include some displacement of species requiring dense cover, such as several of the Neotropical migratory bird species and pileated woodpeckers. SPB control measures lessen the chance of future SPB epidemics. SPB control would also increase the growth rate of remaining trees in the project area, which would in the future aid those species requiring mature forest stands. The RCW and certain Neotropical migratory birds require open, early successional forest; turkey, quail, and white-tailed deer would all gain some future benefits from the cumulative effects of SPB control proposed in Alternative 2.

Because mature pine forest provide habitat for some migratory birds, the U.S. Fish and Wildlife Service (USFWS), which has the responsibility for regulating impacts to migratory birds, was contacted to discuss potential effects of this proposed activity. A list of conservation priority species likely to occur within the project areas in or near affected habitats was obtained from that contact (Chuck Hunter, personal communication to Tim Mersmann, June 8, 2001). Based on discussions with USFWS and Georgia Department of Natural Resources staff (Chuck Hunter, personal communication, *ibid*; Nathan Klaus, personal communication, July 9, 2001), it was concluded that priority migratory birds would not be negatively affected by SPB-suppression actions, and three species are expected to benefit from the proposed action. Neutral effects are expected for those species that may be found near mature pine habi-

tats, but which are not dependent on them. Beneficial effects are expected for those species dependent on mature pine forest, particularly those that prefer open fire-maintained pine forest, which is the desired condition for affected stands within the project area (the tentative RCW HMA).

Specifically, expected effects to priority species are shown in Table 4.

**Table 4 - Expected Effects to Priority Species**

Conservation Priority Species	Effects of SPB Suppression
Bachman's Sparrow ( <i>Aimophila aestivalis</i> )	Beneficial
Chuck-will's Widow ( <i>Caprimulgus carolinensis</i> )	Beneficial
Kentucky Warbler ( <i>Oporornis formosus</i> )	No Effect (or Neutral)
Pine Warbler ( <i>Dendroica pinus</i> )	Beneficial
Prothonotary Warbler ( <i>Protonotaria citrea</i> )	No Effect (or Neutral)
Swainson's Warbler ( <i>Limnothlypis swainsonii</i> )	No Effect (or Neutral)
Whip-poor-will ( <i>Caprimulgus vociferus</i> )	No Effect (or Neutral)
Wood Thrush ( <i>Hylocichla mustelina</i> )	No Effect (or Neutral)

### **Proposed, Endangered, Threatened, and Sensitive Species and Locally Rare Species**

For more specific information on this proposed action with regard to PETS, please refer to Appendix L, which is the Biological Evaluation for this project.

#### ***Bachman's Sparrow***

The proposed action would have no direct, indirect, or cumulative effects to this species, as it occurs just outside of the project area.

#### ***Oglethorpe Oak***

If an SPB infestation were to occur near these known locations, proper mitigations (such as felling trees away from plants and avoiding skidding trees across areas where plants are identified) would be put into place to protect the species. Removal of infested pine trees would have no direct, indirect, or cumulative effect on this species.

#### ***Red-cockaded Woodpecker***

This species was previously described under MIS.

#### ***Sherman's Fox Squirrel***

The SPB infestation would kill trees that may be habitat for this species, but the proposed control actions would have no detrimental effects, since the only trees to be cut would already be infested or soon be infested with SPB. The proposed action will have no direct, indirect, or cumulative effects to the Sherman's fox squirrel.

**Summary of Determination of Effects on PETS**

Table 5 shows the summary of the determination of effects on PETS within the project area on the Oconee NF. The proposed action is not likely to affect the RCW adversely. The proposed action will have no impact on the Oglethorpe oak, Bachman’s sparrow, or Sherman’s fox squirrel.

**Table 5 - Determination of Effects on PETS within the Project Area**

Common Name	Scientific Name	Determination of Effect
<b>Plants</b>		
Oglethorpe Oak	<i>Quercus oglethorpensis</i>	No Impact
<b>Animals</b>		
Red-cockaded Woodpecker	<i>Picooides borealis</i>	Not Likely To Adversely Effect
Bachman’s Sparrow	<i>Aimophila aestivalis</i>	No Impact
Sherman’s Fox Squirrel	<i>Scuirus niger shermanii</i>	No Impact

**Locally Rare Plants**

The proposed action should not impact the habitat for any locally rare animal species (Table 6). All locally rare plant species will be protected in place by avoidance.

**Table 6 - Determination of Effects on Locally Rare Plants within the Project Area**

Common Name	Scientific Name	Determination of Effect
Carolina Anemone	<i>Anemone caroliniana</i>	No Impact
Dwarf Palmetto	<i>Sabal minor</i>	No Impact
Pink Lady’s Slipper	<i>Cypripedium acaule</i>	No Impact
Southern Twayblade	<i>Listers australis</i>	No Impact

Future management activities and project locations will be analyzed utilizing any new information available on PETS and locally rare species. No significant cumulative effects to PETS or locally rare plants are expected from past, present, and reasonably foreseeable future actions.

**Aquatic Biota**

If SPB control measures are implemented, there would be minimal effects to aquatic biota within the project area, provided proper mitigation measures are put in place.

In general, SPB control treatments would not occur near aquatic habitats. In the majority of cases, SPB-killed pine trees would be allowed to die naturally along streamside zones near aquatic habitats. Only in extremely limited cases (such as a high threat to an RCW cluster, threats to adjacent private lands, public safety hazards in recreation areas, etc.) would SPB infestations be controlled in these riparian zones. Dead pine trees may result

in a minor loss of stream shading. In the rare occasion when riparian zones would be accessed by reopening or construction of temporary use roads, Georgia's BMPs would be followed to mitigate any potential adverse affects to streams. Dead pines that fall into the water may create additional preferred fish habitat (pools, shade, and cover).

Control actions of cut and leave and cut and remove would have no effect on aquatics due to effective BMP mitigations. This includes any private land activities, road construction, or land clearing. The activities proposed (along with BMP measures) in this area, combined with the ongoing and foreseeable activities on the national forest and on private land would maintain aquatic habitat.

### **Issue B – Soils, Wetlands, and Floodplains**

Compaction would occur in areas where the cut-and-remove method is used due to associated equipment used. SPB-suppression operations may require reopening some closed temporary-use roads (approximately 5 miles total of existing temporary use roads may be opened).

Increases in erosion are expected to be within the range of natural variability and should not affect soil productivity or sedimentation rates. With proper mitigation to maintain groundcover on exposed soils, erosion, and sediment delivery would be within acceptable limits. Increases in the levels of erosion and sedimentation, and related impacts on soil productivity, are expected to occur almost entirely during the first 2–3 years following implementation of Alternative 2.

Only erosion has the potential to create environmental harm by being additive with past, other present, or future actions on national forest or private lands within the project area. Erosion from these actions has ceased, because of mitigation measures applied.

There could be minor increases in water yield due to removal of pines (which are a part of the transpiration process). Increases would be of short duration, less than 1–2 years, and no long-term effects are anticipated. The potential for cumulative effects on the water resource is not expected to be significant within the project area. Downstream beneficial uses, fishing, would not be affected.

Future actions within the project area could reasonably include timber harvest, road maintenance, and prescribed burning. Little change is expected in private land uses within the next 5 years. Similar actions in the past have shown that this is not detrimental to the watersheds.

### **Issue C – Economic Effects on Ecosystems**

Since 1991, major investments of time, money, and resources have occurred to ensure the recovery of the endangered red-cockaded woodpecker on the Oconee NF. The following background discussion is provided to better understand the current condition/existing situation of recovery efforts.

## **RCW Recovery Program Background**

The RCW was first listed as an endangered species in 1970. The primary reason for the RCW's decline in numbers is the disappearance of suitable mature pine forest in the South.

The Oconee NF (including the Hitchiti Experimental Forest), combined with the adjacent Piedmont National Wildlife Refuge, contains one of the last remaining RCW populations in the Southeast.

## **Legal Requirements**

Under the direction of the RCW FEIS, the Oconee NF, Hitchiti Experiment Forest and Piedmont National Wildlife Refuge are combined by a Memorandum of Understanding (FSM 2609.23) as a single "recovery population." Under the Endangered Species Act, the Oconee NF must not jeopardize endangered species and must carry out programs for their conservation (16USC1536(a)). Therefore, the Oconee NF must protect all existing RCW and nests, and provide future foraging and nesting habitat within the national forest south of Interstate 20 (this area is otherwise known as the HMA and sub-HMA). The recovery population objective is to create and protect enough RCW habitat to support 250 breeding pairs of red-cockaded woodpeckers (RCW FEIS, p. 118). This recovery population goal is based on the numbers needed to provide a genetically sustainable population.

During the past 10 years, major investments of time, money, and resources have been put in place to pursue the recovery population goal and to remain in compliance with the Endangered Species Act, SPB EIS, and RCW EIS.

The following activities are included in the RCW recovery program.

**Monitoring** - Field survey, data collection, and removal of cavity competitors (primarily flying squirrels) to document and support the survival and growth of the RCW population.

**Artificial cavities (nests)** - Creating artificial cavities in mature pine trees to speed population expansion and eventual recovery of the species.

**Translocating birds** - Trapping/Moving birds from one location to another to speed population expansion and eventual recovery of the species.

**Banding** - Placing identification bands on birds prior to translocations.

**National Environmental Policy Act** - Conducting and documenting environmental analysis for RCW recovery work as mandated by NEPA. This work includes GPS/GIS database management.

**Vegetative Management** - Managing the vegetation to provide the designated critical foraging and nesting habitat:

- Midstory Control
  - Mechanical removal of midstory within RCW clusters
- Prescribed Burning
  - Controlled application of fire in RCW habitats to aid in the control of mid-story vegetation
- Pine Restoration/Plantings
  - Planting pine seedlings to provide future RCW habitat

Table 7 displays the associated costs from 1991–2000 for the Oconee/Hitchiti Experimental Forest’s RCW recovery program. *(Cost is based on salaries, supplies, overtime, administrative, and fleet expenses.)*

**Table 7 - RCW Recovery Program Costs 1991–2000**

Year	Monitoring	Artificial Cavities	Trans-location	Banding	NEPA	Vegetative Management		
						Midstory Control	Prescribed Burning	Pine Planting
1991	\$10,000	\$750	\$12,000	\$15,000	\$500	\$6,500	\$16,485	\$67,855
1992	\$10,000	\$750	\$0	\$15,000	\$1000	\$0	\$16,380	\$81,110
1993	\$10,000	\$750	\$12,000	\$15,000	\$1500	\$12,900	\$60,900	\$54,186
1994	\$16,000	\$1,000	\$0	\$15,000	\$2500	\$0	\$21,840	\$96,301
1995	\$10,000	\$1800	\$0	\$0	\$2750	\$7,300	\$27,000	\$91,621
1996	\$8,000	\$2300	\$12,000	\$0	\$4500	\$0	\$53,265	\$54,719
1997	\$8,000	\$2300	\$12,000	\$0	\$4500	\$0	\$122,955	\$2,311
1998	\$10,000	\$2300	\$12,000	\$1,000	\$4500	\$10,000	\$235,185	\$38,533
1999	\$8,000	\$3300	\$12,000	\$1,000	\$5000	\$0	\$267,675	\$9,724
2000	\$16,000	\$3300	\$0	\$2,300	\$16000	\$0	\$363,990	\$0
<b>TOTAL COSTS</b>	<b>\$106,000</b>	<b>\$18,550</b>	<b>\$72,000</b>	<b>\$64,300</b>	<b>\$42,750</b>	<b>\$36,700</b>	<b>\$1,185,675</b>	<b>\$496,360</b>

NEPA – National Environmental Policy Act

**GRAND TOTAL FOR ALL RECOVERY ACTIVITIES.....\$2,022,335**

During the past 10 years, the Oconee/Hitchiti Experimental Forest has invested more than two million dollars in the RCW recovery program. This decade of RCW recovery management has resulted in an increase in bird numbers and active clusters (a cluster is an aggregate of nest trees, plus a 200-foot buffer). Table 8 shows the RCW population numbers on the Oconee/Hitchiti Experimental Forest (MIS Population and Habitat Trends, p. 67).

The proposed action would minimize the loss of RCW recovery investments. By limiting SPB infestations to smaller areas, less RCW habitat is impacted, thereby minimizing effects to the recovery program. As a result, the PNWR’s recovery program would be minimally impacted.

**Table 8 – Oconee/Hitchiti Experimental Forest RCW Population Data**

Year	#of RCW	# of Active RCW Clusters
1991	39	12
1992	34	13
1993	43	16
1994	41	16
1995	38	16
1996	36	13
1997	40	16
1998	39	18
1999	32	16
2000	42	19
2001	52	20

Alternative 2 would result in similar monitoring costs as that described in Alternative 1 but would add additional monitoring costs of the proposed treatments (cut and leave and cut and remove) to determine effectiveness and the need for further action (breakouts).

Pine trees that are infested with southern pine beetles die rapidly, and the loss of timber value will occur regardless of the alternative chosen.

**Cut and Remove:** Revenue received from the sale of salvaged sawtimber would be estimated to average approximately \$125 per MBF, or \$875 per acre (7 MBF/acre). Direct project costs using the cut-and-remove method would include sale preparation and administration costs of approximately \$15/MBF, or \$105/acre (\$15/acre x 7 MBF/acre).

**Cut and Leave:** At current epidemic levels Forest Service personnel would not be able to keep up with the infestations. Other methods would be required, including the use of contracting (for chain-saw felling or mechanical felling). Direct project costs for chain-saw felling of SPB-infested trees would be approximately \$100 per acre but could vary significantly depending on the total number of trees to be felled, the average tree size, number of trees per acre, and topography.

No significant cumulative effects would be expected. Trees that existed prior to the loss to SPB would be replaced, maintaining long-term growth and investment in timber resources. As these reforested infestations mature, visual impacts would lessen, and aesthetic values would be maintained. Future management efforts to recover the endangered red-cockaded woodpecker would continue to build upon the solid foundation of during 10 years (and \$2 million) of positive conservation investments.

#### **Issue D – Forest Health and Issue E – Safety**

There will be a change in visual quality as the infested trees are cut and either removed or left. Safety hazards from falling dead trees and limbs would be minimized. There still would be a danger of wildland fire to areas of the project area, including private lands,

but this danger would be less than Alternative 1, as potential fire fuels are removed off site.

From 1980 to 1993, total recreation use for the forest increased by approximately 38 percent (USDA, Recreation Facts, 1994). During that same period the forest implemented silvicultural projects that included various forms of tree harvesting (including SPB control), road maintenance, and prescribed burns. Properly designed and executed SPB activities do not reduce the number of persons using and enjoying the forest. With the stipulated mitigation measures, Alternative 2 would not disrupt the recreation resource and would protect the resource from future degradation.

Effects to private lands would be minimized, as SPB-infested trees located adjacent to private lands would be treated, thereby reducing the chance of SPB spread from national forest land to private property.

## APPENDIX A

### Introduction to Forest Planning and Plan Implementation

The Forest Service uses a two-level process for all natural resource decisions: Programmatic Decisions and Project-Level Decisions.

#### Programmatic Decisions

The first-level decisions are called programmatic decisions. They set the framework within which specific management actions will be carried out, but they do not decide on the specifics of individual actions. There are three programmatic environmental documents—*Land and Resource Management Plan for the Chattahoochee-Oconee National Forests* (Forest Plan), *Final Environmental Impact Statement for the Suppression of Southern Pine Beetle* (SPB FEIS) and its Record of Decision, and *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* (RCW FEIS)—that apply to this proposed action.

#### Forest Plan

The first is the *Land and Resource Management Plan for the Chattahoochee-Oconee National Forests* (Forest Plan), which was approved by the Regional Forester in September 1985 and has been amended 19 times. The National Forest Management Act (NFMA) of 1976 directed the Forest Service to make a plan for each national forest. The law also said all resources would be considered together at one time. The Forest Service developed the Chattahoochee-Oconee Forest Plan to meet the law requirement. The Forest Plan did not decide on specific actions or projects that would occur in the national forest; instead it made certain first-level, or programmatic, decisions. For an overview of the forest planning process, see [www.fs.fed.us/forum/nepa](http://www.fs.fed.us/forum/nepa).

#### Southern Pine Beetle Environmental Impact Statement and Record of Decision

The second applicable programmatic document is the *Final Environmental Impact Statement for the Suppression of Southern Pine Beetle* (SPB FEIS) and its Record of Decision (ROD), which were approved in 1987. The environmental impact statement (EIS) evaluated possible southern pine beetle (SPB)-suppression methods. The Chief of the Forest Service (as the Responsible Official) made the following decisions that apply to the Oconee in the Record of Decision. He decided on effective SPB-suppression methods, which were approved for use in the Southern Region, set standards to be followed in the carrying out of each method, and established a framework within which to site-specifically evaluate SPB suppression near RCW colonies (clusters). The requirements of the Record of Decision for SPB suppression were amended into the Chattahoochee-Oconee Forest Plan.

## **RCW FEIS**

A third programmatic environmental document that relates to this proposal is the *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* (RCW FEIS). Then-Regional Forester Robert Joslin approved the Record of Decision in June of 1995. The management direction for the Oconee designated 52,966 acres of the Oconee as a habitat management area for RCW, with a population objective of 176 active clusters, and a management intensity level (MIL) of 4 (meaning extreme risk of extirpation).

### **Project-Level Decisions**

The second-level decisions are project-level, or site-specific, decisions. These are decisions to do something on the ground, and they must comply with all the programmatic decisions that have preceded them. The decision supported by this environmental analysis will be a project-level decision.

### **National Environmental Policy Act**

When we propose an action that requires project-level decision, we move into a process required by the National Environmental Policy Act (NEPA) of 1969. NEPA is the basic national charter for protection of the environment. The process is called *environmental analysis*. Key parts of the NEPA environmental analysis process include an interdisciplinary approach, public involvement to find out the issues or concerns that people have with the proposed actions and possible environmental effects of a proposal, alternative ways of addressing issues and achieving desired conditions, public notification of the results of the environmental analysis, and an opportunity for public appeal of the decision.

### **Environmental Assessment and Decision**

An environmental assessment (EA) is a document that discusses the need for a project-level proposal, alternatives to the proposal, and environmental impacts of the proposed action and alternatives. The EA will provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement. If an EIS is not necessary, the EA will be the basis for deciding whether to go forward with a proposed action. This decision to proceed is documented in a Decision Notice (DN). One finding required by NEPA will be a Finding of No Significant Impact (FONSI), which is a finding that the quality of the human environment will not be significantly impacted by the actions decided, provided the analysis in the EA supports that conclusion.

### **Endangered Species Act and Biological Evaluation**

The Endangered Species Act (ESA) of 1973 provides a means to conserve threatened and endangered species and the ecosystems on which they depend. The act requires that all Federal agencies ensure through consultation with the U.S. Fish and Wildlife Service that actions are not likely to jeopardize the continued existence of listed species, or result in destruction or adverse modification of critical habitat. The Forest Service is required to

evaluate planned activities for possible effects on proposed, endangered, threatened, and sensitive (PETS) species. The process and resulting document is called a Biological Evaluation (BE). A reference to the effects of the planned activities on PETS species will be made in the FONSI part of the Decision Notice.

### **National Historic Preservation Act and State Historic Preservation Office**

The National Historic Preservation Act, amended in 1982, expresses a general policy of supporting and encouraging the preservation of prehistoric and historic resources by directing Federal agencies to assume responsibility for considering historic resources in their activities. The Advisory Council on Historic Preservation has established a process to be followed by Federal agencies to avoid any adverse effect on historic properties. This is done through the State Historic Preservation Office (SHPO). A reference to the effects of the planned activities on prehistoric and historic resources will be made in the FONSI part of the Decision Notice.



## **APPENDIX B**

### **Mitigation Methods and Monitoring**

#### **Mitigation**

The Oconee National Forest will mitigate environmental effects caused by these southern pine beetle (SPB)-suppression actions by adhering to the applicable Regional and forest-wide standards and guidelines contained in the *Land and Resource Management Plan for the Chattahoochee-Oconee National Forests* (Forest Plan), *Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle in the Southern Region* (SPB FEIS), and *Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont* (Veg FEIS).

Mitigation for adverse impacts from the cut-and-remove method would be similar to mitigation measures employed during a commercial timber harvest (SPB FEIS, p. 2-24). Standard uses are conventional logging equipment (rubber-tired skidders with grapples and sometimes cables) and chain saw felling. Contract provisions will be utilized to prevent or mitigate soil and water impacts associated with the cutting and removal of pine trees and constructing temporary-use roads. Perennial and intermittent streams will be protected with “erosion protection and equipment limitation” strips (designated zones where major soil disturbance is to be avoided).

#### **Monitoring and Evaluation**

Implementation monitoring will ensure that contractors involved with the control activities fulfill the terms of their contracts and that suppression efforts are designed and laid out on the ground to meet standards and guidelines. Implementation monitoring will be accomplished through harvest and contract inspections conducted by certified timber sale administrators and contract inspectors. This will ensure that the appropriate standards and guidelines will be implemented to protect soil productivity, water quality, and other resources. Effectiveness monitoring will ensure that the mitigations prescribed for the suppression actions are effective and preclude significant environmental effects on each site. The Forest Interdisciplinary (ID) Team will monitor the environmental effects as directed by Chapter 5 (Implementation of the Forest Plan) of the Forest Plan.

Action taken on each infestation will be screened against the Environmental Assessment to ensure that applicable constraints are identified and implemented. This will ensure ongoing monitoring with checks and balances for such things as the Biological Evaluation, U.S. Fish and Wildlife Service concurrences, and State Historic Preservation Office clearance. Each infestation will have a written record of evaluation for proposed, endangered, threatened, and sensitive (PETS) species, U.S. Fish and Wildlife Service concurrence (if necessary), and heritage resources. This will become part of the project file. This documentation will serve as a “Certification Statement” for each infestation evaluated.

Management areas covered by this decision would include:

**Management Area 16 - General Forest Area.** These areas are classified as “suitable for timber production.” The objectives of SPB suppression would be to ensure a high level of annual or periodic output of the forest resources, including wood fiber, wildlife habitats, water, and recreation settings. The sustainability of these resources would be at risk from an SPB epidemic. Large-scale forest structure changes, where large areas of the forest change from biologically mature trees to small seedlings, introduce a “boom or bust” situation to wildlife habitats, timber yields, and recreation settings.

**Management Area 17 - Red-cockaded Woodpecker Habitat Management Area.** This area is for red-cockaded woodpecker management and classified as “suitable for timber production.” It is located on the south end of the Oconee NF near Gladesville and Hillsboro. The objective of SPB suppression would be to ensure habitat for the RCW, which would meet the requirements of the RCW FEIS and the Endangered Species Act.

## APPENDIX C

### Requirements for Southern Pine Beetle

For southern pine beetle (SPB) populations to build there are two basic requirements. Both of these are occurring on the Oconee National Forest.

The *first* requirement is that susceptible tree species are present. More than 70 percent of the forested acres on the Oconee is predominantly southern yellow pine, with almost 2 percent more having a yellow pine component of up to 49 percent of the dominant and codominant trees.



USDA Forest Service,  
Southern Research Station.

The *second* requirement is that there has been a reduction in tree health or vigor. Factors that can reduce vigor include droughts, floods, ice storms, overly dense stands, overmature trees, and windstorms. Drought conditions existed throughout the year 2000. Many stands are crowded and have a less than vigorous growth rate. For the Oconee National Forest, 28 percent of the pine and pine-hardwood types are classed as mature. Also for the Oconee, 45 percent has a low SPB hazard rating, 25 percent medium, and 30 percent high. (Hazard ratings are determined by a combination of stand characteristics, including age, density [trees/acre], and site index.)

SPB populations can build very rapidly and overwhelm the defenses of even healthy trees. There may occur as many as seven overlapping generations of SPB per year. From every 3 to 4 weeks new generations of SPB emerge; and because generations overlap, adults could mature and emerge continuously. Each generation has the ability to increase its population tenfold. Approximately 1,000 beetles can become 1,000,000 within five generations. Multiple-overlapping generations, the ability of female beetles to produce at least two broods, and the explosive population growth potential make areawide control a formidable task.

In particular, the epidemic on the Hitchiti Experimental Forest and the adjacent Piedmont National Wildlife Refuge is of extreme concern. There are 20 active clusters of red-cockaded woodpecker, a federally listed endangered species, on the south end of the Oconee. The U.S. Fish and Wildlife Service (USFWS) (the Federal agency responsible for listing of species under the Endangered Species Act) has identified these clusters (34 active clusters), together with those on the Piedmont National Wildlife Refuge, as a “recovery population.”

The *Final Environmental Impact Statement for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* (signed June 1995) recognizes the Oconee population as being at extreme risk of extirpation. In addition, the USFWS population objective for the Oconee is 250 actively breeding pairs. To reach this objective, the present population must both survive and expand into presently unoccupied habitat, thus the need for this action.

**APPENDIX D**  
**Southern Pine Beetle Control in**  
**Red-cockaded Woodpecker Clusters**

If the 200-feet-from-a-cavity-tree guideline were in effect for the Oconee National Forest red-cockaded woodpecker breeding season (from April 4 to July 6), then the following scenarios would occur:

1. Within 200 feet of a cavity tree and within the breeding season, cut and remove infested trees using chain saws and/or tree-shearing equipment, but do not cut a buffer of uninfested trees. Cut trees must be removed outside of the 200-foot zone. The maximum acreage that could be treated by this method is estimated to be 90 acres, assuming that every cluster was attacked simultaneously, which is very unlikely.
2. Outside the 200-foot zone, regardless of timing, with adequate forage cut and remove infested trees and an uninfested buffer from 1 to 1.5 times the height of the infested trees in the direction of spread.
3. Outside the 200-foot zone, regardless of timing, with inadequate or marginal forage cut and remove only the infested trees.



## **APPENDIX E**

### **Monitoring and Evaluation**

Prior to a National Environmental Policy Act decision, southern pine beetle (SPB) activities on the Oconee National Forest are monitored in the pine and pine-hardwood cover types by:

- Pheromone trapping in the spring to determine SPB population levels and the ratio of SPB to predator insects and to forecast expected activity for the year.
- Conducting aerial-detection flights, as needed.
- Mapping of SPB infestations using field reconnaissance, global positioning systems (GPS), aerial photography, and topographic quadrangle maps.
- Tracking the SPB situation data in the computerized Southern Pine Beetle Information System (SPBIS) database.

Infestations are evaluated to determine the best suppression method and priority for treatment. Ground surveys are conducted for heritage resources and proposed, endangered, threatened, and sensitive (PETS) species when ground-disturbing activities are planned. Procedures for heritage resource and PETS surveys are described later in this section.

When assessing the need for SPB-suppression activities, the forest will recognize the ecological values of SPB-killed trees as brood trees for SPB predators for biological control, for cavity-nesting birds and mammals, and for future large, down woody debris. The forest will leave both individual trees in treated infestations and individual infestations when they meet any one of the following criteria.

- SPB have emerged, either from an individual tree or from all trees in the SPB infestation; therefore, the tree or infestation is vacated and no threat.
- The infestation has less than 10 infested trees and no freshly attacked trees.
- Pine host trees are scattered individuals or groups in a stand of trees with a hardwood forest cover type.

Suppression actions could begin no sooner than the fifth business day after the 45-calendar-day appeal period following a decision on this proposed action. If the decision is appealed but then affirmed, implementation would begin 15 calendar days after the disposition of the last appeal. If the decision is appealed and the appellant is sustained, then a reanalysis and new decision would be required.

The forest will discontinue SPB-suppression efforts when monitoring shows SPB activity to be at less than the epidemic level. Epidemic level is defined as more than one multiple-tree infestation per 1,000 acres of susceptible host forest type. The decision of when

to stop suppression efforts will use this and the population of SPB predators and parasites (especially clerid beetles/*Thanasimus dubius*, the primary SPB predator) as the criteria.



Clerid Beetle

USDA Forest Service, Southern  
Research Station

### Procedure for Heritage Resources/Archaeological Sites and PETS Surveys

For **Heritage Resources/Archaeological Sites**, the State Historic Preservation Officer (SHPO) concurs with specially developed forest procedures for rapid screening of proposed ground-disturbing actions (*see* 1994 Memorandum of Agreement between the SHPO and the Forest Service). Soon after ground reconnaissance of SPB infestations and prioritization for suppression, heritage resource screening would be done by, or under the supervision of, a professional archaeologist (if ground-disturbing actions are proposed). The archaeologist will use the following direction:

Determine if there is an **existing** heritage resource survey and report, with SHPO concurrence, for each infestation. If there is an existing survey and report, and concurrence, then determine if there are heritage sites that need protection. If there are previously identified sites, field locate sites, mark sites, and protect by avoidance. If there are no previously identified sites to protect, implement suppression actions.

If there is no existing survey then conduct a field survey for cultural sites. If sites are found, determine tentative National Register of Historic Places eligibility immediately in the field. If the site is found to be potentially eligible, protect the site for later SHPO concurrence. If the site is not potentially eligible, actions will be implemented. If no sites are found, implement suppression actions.

For **PETS species**, criteria for locations on the Oconee National Forest that require PETS surveys were developed and put into effect as a Revised Oconee Risk Assessment (January 8, 1993). As new SPB infestations are discovered, the discoverer will notify the forest botanist or district biologist. They will analyze each area (SPB infestation) using criteria such as age, forest type and degree of canopy closure (shading), proximity to known PETS locations, and research any other records for the areas. They will then determine if additional analysis and/or surveys are needed before any ground-disturbing activities take place or before any infested trees are felled.

The criteria for conducting PETS surveys would be applied to specific areas on the sub-habitat management area as follows:

- National Forest System lands in Jasper and Jones counties that would require surveys include hardwood forest type stands on moist (mesic) to wet (hydric) sites along stream courses and smaller drainages, and forest stands associated with Ire-dell soil types and granite rock outcrops.

## **APPENDIX F**

### **Permits, Licenses, and Agreements**

The Georgia Forestry Commission (GFC) is the State agency with the responsibility to see that the requirements of the Federal Clean Water Act are met for all forestry-related nonpoint sources of pollution in the State of Georgia. The GFC's handbook *Georgia's Best Management Practices (BMPs) for Forestry* (1999) is the source of conservation practices designed to prevent or reduce the pollution from forestry activities to a level that meets or exceeds State-designated water quality beneficial uses for streams and rivers such as swimming. In 1991, the Forest Service and the GFC signed a Memorandum of Understanding (MOU, 1991) outlining the responsibilities of each agency with regard to water quality management and forest management. In the MOU, the Forest Service agreed to recognize State-designated beneficial water uses and meet BMPs. Current Forest Plan standards and guidelines for erosion and sediment control for cut-and-removal treatments and road-building activities meet or exceed the direction of the BMPs. GFC agreed to review the Forest Service process of selecting BMPs and monitor State-approved BMPs on National Forest System lands.

Before ground-disturbing actions may occur, the State Historic Preservation Officer (SHPO) must agree on procedures to be used to determine whether or not heritage resource sites are present, on their status under the National Historic Preservation Act (NHPA), and on the protection measures for them. SHPO agreement to these procedures will have been received before a decision is made on this proposal.

To meet the requirements of the national Endangered Species Act, the presence or absence of, and possible effect on, federally listed proposed, endangered, or threatened species will be analyzed before a decision on this proposal is made. Since the red-cockaded woodpecker is present and may be affected, the U.S. Fish and Wildlife Service (USFWS) will be brought into project analysis and design. Their agreement will be required to state that the project would not jeopardize the red-cockaded woodpecker. In addition, the Forest Service assesses the occurrence of, and possible effect on, species on a Forest Service list of sensitive, threatened, or endangered species. The method used is first a risk assessment followed, if needed, by a field survey.



## APPENDIX G

### Management Indicator Species

Regulations (36CFR219) that were developed to meet requirements of the National Forest Management Act (NFMA) identify management indicator species (MIS) as one planning tool to be used by the Forest Service to meet NFMA's mandate to "provide for a diversity of plant and animal communities." MIS are selected to reflect the diversity of habitats found on a national forest. MIS are used during planning to (1) set habitat objectives and management requirement, (2) focus analysis of effects, and (3) monitor effects of management. Guidelines for selection of MIS outlined in NFMA regulations include consideration of the following factors:

1. Demand; that is, whether a species is hunted, trapped, or fished. The use of demand as a factor reflects both the "human dimension," or how people interact with the ecosystem, and interest in ecosystem products.
2. The listing as proposed, endangered, or threatened by the U.S. Fish and Wildlife Service, the Federal agency responsible for listing species, as required by the Endangered Species Act (ESA). Use of this factor reflects concern for species diversity and compliance with the ESA.
3. The ability of a species to serve as an ecological indicator of the condition of an ecosystem, including the aquatic ecosystem. Concern for community diversity is the basis for using this criterion.
4. The need for species to serve as indicators of specialized habitats, such as bogs, is the final criterion. This criterion also addresses community diversity concerns.

MIS also contribute to ensuring national forests are managed to "maintain viable populations of existing native and desired non-native vertebrate species in the planning area" (36CFR219.19). By providing a diversity of habitats across a national forest to meet the needs of MIS, most other species also are maintained. However, some species' needs may not be met with this approach. To ensure these species are considered and maintained, the Biological Evaluation process analyzes effects to those species deemed most at risk of losing viability—federally listed and sensitive species.

The Forest Plan (p. 3-21, Table 3-8) chose 20 management indicator species. Together they represent six stages of succession (the gradual replacement of one plant community by another), five special habitats or habitat components, and three federally listed threatened or endangered species (Forest Plan, p. 3-22, Table 3-9). From these 20, those with a range that included the project area were chosen by wildlife professionals as project MIS. The Acadian flycatcher (*Empidonax virescens*) (replacing the Dusky salamander/*Desmognathus fuscus*) was recently added as a forest MIS by amendment to the Forest Plan.

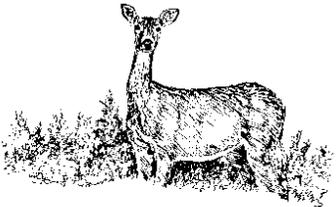
**Table G-1 – Project Management Indicator Species**

Species	Desired	Existing	Problem/Opportunity	Proposed
<b>Black Bear</b>	Does not occur on project area.			
<b>Ruffed Grouse</b>	Does not occur on project area.			
<b>Bog Turtle</b>	Does not occur on project area.			
<b>Yellow Lady's Slipper</b>	Does not occur on project area.			
<b>Mountain Pitcher Plant</b>	Does not occur on project area.			
<b>Trout: Brook, Brown, and Rainbow</b>	Do not occur on project area.			
<b>Redeye Bass</b>	Does not occur on project area.			
<b>Coosa Darter</b>	Does not occur on project area.			
<p><b>Red-cockaded Woodpecker (RCW)</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Endangered species</li> <li>- Occurs within project area</li> <li>- Ecological indicator (late pine)</li> </ul>	<p>Habitat typically consists of Southern yellow pine trees that are mature (more than 80 years old) or almost mature for nesting and foraging. Open pinewoods with little or no midstory vegetation. Foraging areas should be "park-like" and should be contiguous with the cluster site (not fragmented). Nesting occurs in cavities of live pine trees that are usually infected with red heart disease.</p>	<p>Habitat levels are low to fairly poor. Older age classes of pine are lacking, which are especially needed for nesting. Potential foraging habitats are fragmented and have thick midstory vegetation, which hinders RCW foraging and increases competition from other vertebrates.</p>	<p>To increase both nesting and foraging habitat. This is a long-term commitment and is much broader in scope than this one proposal.</p>	<p>Control SPB within recruitment and potential foraging stands. Refer to the Final RCW EIS for management direction for SPB infestations in RCW habitat.</p> 
<p><b>Pileated Woodpecker</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Indicator of specialized habitat, especially of large hardwood snags (dead, standing trees typically more than 60 years old)</li> <li>- Year-round resident on the Oconee NF</li> </ul>	<p>Habitat consists of mature (60 years plus) and extensive hardwood and hardwood-pine forest. Habitat is deep woods, swamps, or river bottom forests. Also found in rather open, upland forest of mixed forest types. Foraging and nesting occurs on and in snags, with some foraging also occurring on fallen logs and other forest debris.</p>	<p>Habitat is fairly common throughout the project area, especially along larger stream courses. Older age classes are lacking. The species uses smaller snag trees for nesting. Population levels reflect habitat limitations by this species occurring at low frequency.</p>	<p>Continue to allow aging of riparian hardwood stands. This would maintain populations at the present level and begin to supply potentially larger snag trees for increasing population in the long term.</p>	<p>Maintain dead trees by providing approximately 3 snags for every 2 acres. Larger SPB-killed pines in these areas would provide nesting and foraging. Do not cut or remove these trees where pine is less than 31% of the component, unless the infestation is within 250 feet of a RCW cluster.</p>

**Table G-1 – Project Management Indicator Species (continued)**

Species	Desired	Existing	Problem/Opportunity	Proposed
<p><b>Acadian Flycatcher</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Ecological indicator of riparian corridor habitat</li> <li>- Neotropical migratory bird</li> </ul>	<p>Habitat consists of deciduous forests near streams. Usually builds nest in branches directly overhanging streams. Primarily feeds on insects.</p>	<p>Habitat is fairly good, with riparian areas common across the forest and in generally good condition. Population levels have been relatively stable for this species, with surveys showing an increasing trend in abundance statewide during the past 30 years. Riparian habitat is expected to remain constant over time.</p>	<p>Increase nesting and foraging habitat.</p> 	<p>Do nothing within riparian areas. Allow SPB-killed pines to remain in riparian stands. Use of standards and guidelines will maintain the quality and integrity of existing riparian corridors.</p>
<p><b>Indigo Bunting</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Ecological indicator of early successional (grasses, shrubs, and herbaceous)</li> <li>- Neotropical migratory bird</li> </ul>	<p>Preferred habitat includes forest margins, openings and clearings, overgrown fields, and groves. Not as common in shrubby thickets and hedgerows, because the males favor a few trees within their territories. Deciduous trees are favored over conifers. Feed on seeds and insects gleaned from vegetation on the ground or in shrubs into woods margins up to 15 feet. Usually nest in similar shrubby situations.</p>	<p>Habitat levels are locally abundant in the project area and on adjacent private land.</p>	<p>Continue to have early successional habitat available for nesting and foraging. This species will benefit from SPB-killed infestations, but habitat currently is already abundant.</p>	<p>SPB suppression or nonsuppression activities would benefit this species by creating forest openings and early successional habitat. Achieved either by cut and remove or cut and leave.</p>
<p><b>Northern Bobwhite Quail</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Demand species, hunted</li> <li>- Year-round resident on the Oconee NF</li> </ul>	<p>Favored habitat is abandoned fields; also numerous in hedgerows, thickets, woodland margins (edges) and open woods (usually pine forests). Early, mid-, and late-successional pine forest habitat is utilized as long as it is maintained in open, grassy understory. Ground nester and feeder and requires small thickets for escape and nesting. Eats seeds, berries, and insects. Benefits from management of RCW habitat.</p>	<p>Habitat is mostly in fair condition within the project area. Pine stands in general are not as open as required by quail. There are numerous closed and seeded temporary roads and grassed wildlife openings on the Oconee RD that are available as feeding areas. Most open habitat is in the form of pastures on private lands adjacent to the national forest.</p>	<p>Populations in general are low.</p>	<p>SPB-killed infestations would not benefit quail.</p> 

**Table G-1 – Project Management Indicator Species (continued)**

Species	Desired	Existing	Problem/Opportunity	Proposed
<p><b>Eastern Gray Squirrel</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Demand species, hunted</li> <li>- Ecological indicator (of mature hard/soft mast bearing trees)</li> <li>- Locally common resident of the Oconee NF</li> </ul>	<p>Habitat is mid- to late-successional hardwoods that produce hard and soft mast. Cavity nester, which utilizes larger diameter hollow trees. Must rely on leaf nest if cavities unavailable. Can use habitat where it occurs, including forest, upland, or riparian areas. Forages in treetops or on ground.</p>	<p>Habitat level is low in general, due to the limited acreage of hardwood stands on the Oconee NF.</p>	<p>Maintain population and habitat at present levels.</p>	<p>SPB suppression activities would not affect this species because actions would not occur in primary habitats.</p>
<p><b>White-tailed Deer</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Demand species, hunted</li> <li>- Abundant resident on the Oconee NF</li> </ul>	<p>A user of many habitat types, including forest, riparian and early successional habitats.</p> 	<p>Population levels are fairly abundant in the project area. Grassed openings and closed temporary roads along with regeneration areas supply early successional habitats. Habitats for foraging are represented in all forest age classes up to 80 years. Riparian habitats supply much of the hard mast, and soft mast. Abundant early successional habitat also exists on adjacent private lands.</p>	<p>Maintain population at present level by supplying habitat in the approximate type and proportions (age classes, diversity of habitat types) that now exist.</p>	<p>SPB suppression or non-suppression could create openings in closed canopy pine stands that would benefit deer.</p>
<p><b>Wild Turkey</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Demand species, hunted</li> <li>- Ecological indicator of mid- to late-successional habitat</li> <li>- Year-round resident on the Oconee NF</li> </ul>	<p>Habitat is most common in bottomland forest where understory is moderate. Also occurs in extensive upland hardwood or mixed forest, less so in pure pine forests. Sometimes forages in open woods, edges and woodland openings. Nests on the ground in thickets and feeds on the ground. Hardwood mast, berries, insects and vegetable matter is primary forage.</p>	<p>While habitat is fairly abundant along stream courses, throughout the project area the level is low. Older age classes are lacking but mast-producing trees are fairly abundant as is nesting habitat. There are numerous closed temporary roads that have been seeded where insects and vegetable matter are abundant.</p>	<p>Maintain habitat levels by allowing age classes to grow older. Continue to create or maintain existing openings and continue to seed closed temporary roads. Allow nesting habitat to grow.</p>	<p>SPB suppression would have slight effect upon the habitat or population level of turkey within the project area. Openings may be created that would benefit as nesting or foraging areas.</p> 

**Table G-1 – Project Management Indicator Species (continued)**

Species	Desired	Existing	Problem/Opportunity	Proposed
<p><b>Yellowfin Shiner and Turquoise Darter</b></p> <p>Reasons for inclusion:</p> <ul style="list-style-type: none"> <li>- Ecological indicator (of water quality in small to medium-sized streams)</li> <li>- Common resident in most Oconee NF streams</li> </ul>	<p>This species occurs in a wide range of habitats, from small to medium streams to small rivers. Eats tiny insects from the water surface or suspended in water. As suspended soil increases in water, populations are reduced.</p>	<p>Streams and associated riparian areas are in generally good health. Streams travel through private lands and in many locations do not have a forested riparian area, which results in some detrimental effects—such as increased sediment. Population health outside the Oconee NF is unknown.</p>	<p>Maintain habitat and population at present levels within project area.</p>	<p>Do not disturb riparian areas. Allow SPB-killed pines to remain in riparian stands.</p>



## APPENDIX H

### Glossary

**Best Management Practices (BMPs)** – Forest management practices developed to prevent or reduce water pollution.

**Biological Evaluation** – A documented Forest Service review of its programs or activities in sufficient detail to determine how an action or proposed action may affect any proposed, endangered, threatened, or sensitive species. (FMS 2670.5)

**Cavity tree** – A tree that contains a red-cockaded woodpecker cavity or start hole. It may be artificial or RCW excavated.

**Cluster** – An aggregate of active and/or inactive cavity trees within 1,500 feet of each other.

**Cultural resources.** *See* **Heritage resources.**

**Directional felling** – Felling trees so that they fall in a predetermined direction, which will cause the least damage to the site.

**Epidemic** – An epidemic; that is, an abnormally large, rapidly-spreading pest population.

**Erosion** - The wearing away of the land surface by the action of wind, water, or gravity.

**Felling** – Cutting down standing trees or snags.

**Filter strip** – A vegetated area of land separating a water body from forest management activities that has the ability to intercept runoff and trap eroded soil.

**Foraging area** – Continuous and contiguous pine, pine-hardwood, and hardwood-pine forest stands 30 years of age and older within or further than ½ mile of a RCW active cluster or recruitment stand with at least 6,350 pine stems equal to or greater than 10 inches in diameter and 8 square feet of pine basal area.

**Gully** – A channel, hollow or narrow ravine caused by past land cultivation.

**Harvesting** – The removal of merchantable tree crops from an area.

- a. **Heritage resources** – The physical remains (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context of an area (such as setting for legendary, historic, or prehistoric events, as a sacred area of native peoples) that is important for

**Infestation** – An area of susceptible host species (pine trees) that have been, and/or are being attacked by southern pine beetle.

**Integrated Pest Management** – A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategies includes the impact of the unregulated pest population on various resources values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and ecology of the pest-host system and consist of a combination of tactics such as timber stand improvement plus selective use of pesticides. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable. (36CFR219.3)

**Interdisciplinary team (ID team)** – Consists of persons with different professional backgrounds useful in preparing an environmental analysis.

**Landing** (also referred to as a log deck) – A place where logs are gathered for loading and transporting.

**Management Indicator Species (MIS)** – Any species, group of species, or species habitat element selected to focus management attention for the purpose of resource production, population recovery, maintenance of population viability, or ecosystem diversity. (FSM 2605)

**Mitigation** – An action taken during a projects implementation to lessen adverse impacts or enhance beneficial effects. These measures may take place before, during, or after implementation of the project.

**Recruitment stand** – Stands of pine trees 10 acres or larger containing older trees, which are designated to provide potential nesting habitat for RCW population expansion. They are located within  $\frac{1}{4}$  to  $\frac{3}{4}$  mile of an active cluster or another recruitment stand and must have adequate foraging habitat connected to them.

**Red-cockaded woodpecker (RCW)** – An endangered species that lives in live, mature trees in the South. The RCW is slightly larger than a bluebird, about 7 inches long.

**Regeneration** – A young tree crop that replaces older trees removed by harvest or disaster: the process of replacing old trees with young ones.

**Replacement stand** – Ten acre or larger stands of pine trees located within  $\frac{1}{2}$  mile of and preferably adjacent to all active RCW clusters designated to serve as replacement habitat for existing clusters when trees die or become unsuitable for RCW.

**Sediment** – Soil particles that have been detached and transported into water during erosion.

**Short-term effects** – Those effects that will usually occur within the next ten years.

**Skid trail** – A temporary, nonstructural travelway across forest soil used repeatedly to drag felled trees or logs to a landing, resulting in ground disturbance.

**Skidding** – Moving of logs or felled trees from the stump along the surface of the ground to a point of loading (i.e., landing).

**Skid road** – A bladed roadway in and over forest soil necessary to provide a stable, safe route on which to repeatedly drag felled trees or logs to a landing, resulting in more ground disturbance than a skid trail.

**Snag** - A standing dead tree used by wildlife for nesting, roosting, perching, and food gathering.



## APPENDIX I Soils of the Project Area

Soil Series	Description	Equipment Limitation	Erosion Hazard
<b>Buncombe loamy sand (Bu)</b>  District range: <1%	Deep, excessively drained soil found on natural levee and stream banks. Slopes range from 0 to 5%. Surface and subsoil texture is loamy sand. Flooding occurs on average of once every 2 years, usually between February and June, with duration of usually less than 2 days. Most of the acreage in this series occurs along the Ocmulgee River.	Moderate – Use recommended only during drier periods to prevent rutting.	Slight
<b>Cecil sandy loam (CeB, C, D)</b>  District range: 30% (includes Cecil sandy loam, eroded soils)	Deep, well-drained soils on narrow to broad ridge tops, and on hillsides with from 2 to 15% slopes. Surface texture is sandy loam and subsoil is clay loam to clay. The most common soil series on the Oconee RD.	Slight	Slight
<b>Cecil sandy loam, eroded (CeE2, F2)</b>	Deep, well-drained soils found on hillsides and mid to lower slopes from 15 to 50%. The surface layer is sandy loam, and thin from past erosion. The upper subsoil is sandy clay, the middle is clay and clay loam, and the lower part of the subsoil is fine sandy loam.	Moderate on slopes under 35%.	Severe due to steepness of slopes. Avoid exposing soils. Revegetate exposed soils as soon as possible.
<b>Gwinnett sandy loam (GwB, C)</b>  District range: 15%	Moderately deep, well-drained and very gently sloping soils located on ridge tops and hilltops with slopes from 2 to 10%. The surface layer is sandy loam. The upper part of the subsoil is clay loam to clay, and the bottom part of the subsoil is sandy loam.	Slight	Slight
<b>Hiwassee loam (HeB, C)</b>  District range: 20% (includes Hiwassee clay loam soils)	Deep well-drained soils located on ridge tops and upper side slopes from 2 to 10%. The surface layer is loam. The upper subsoil is clay loam to clay, the middle subsoil is clay, and the lower subsoil is clay loam.	Slight	Slight
<b>Hiwassee clay loam (HwD2, E2)</b>	Deep well-drained soils found on hillsides with slopes from 10 to 30%. Due to moderate past erosion, the surface layer is thin. Surface texture is clay loam, upper subsoil is clay loam, middle subsoil is clay and bottom subsoil is fine sandy loam.	Moderate to severe	Moderate to high depending on slope. Avoid exposing soils. If exposed, revegetate as

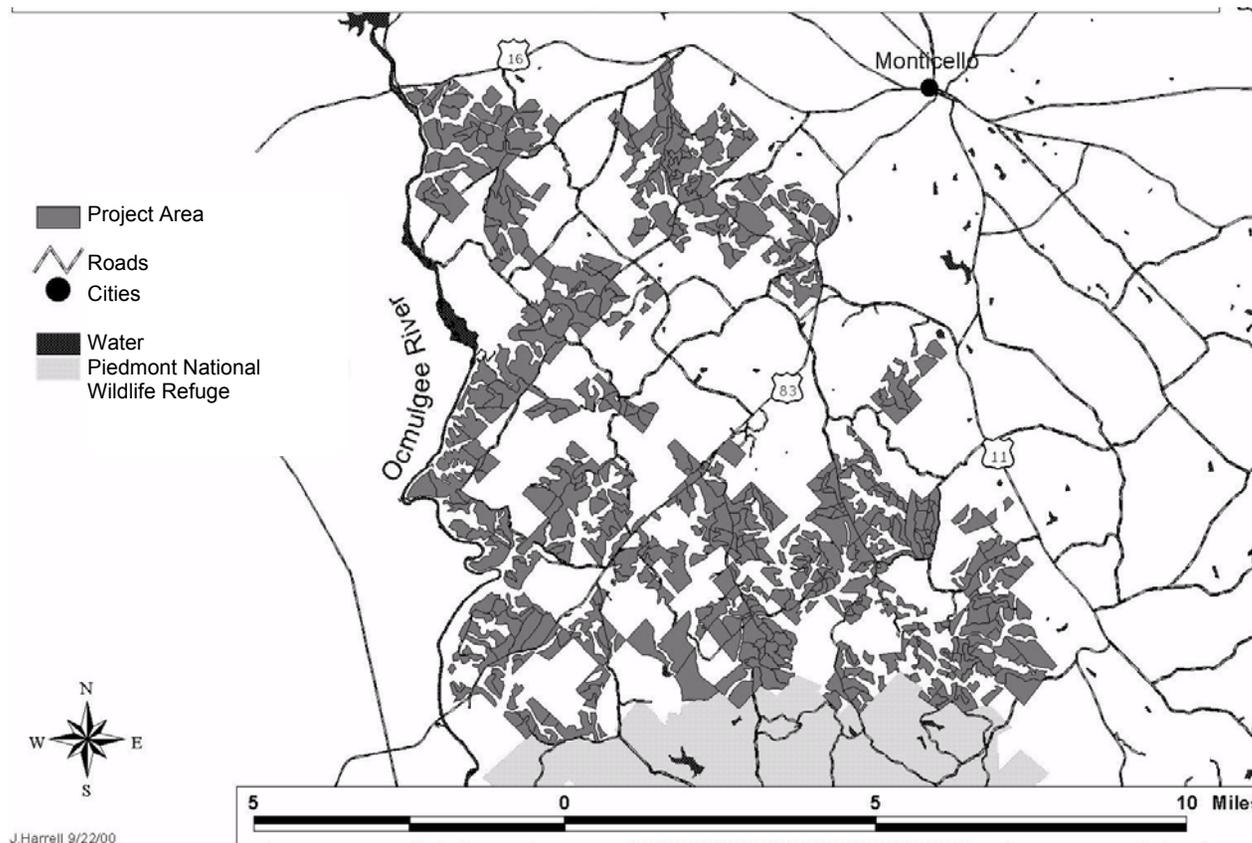
Soil Series	Description	Equipment Limitation	Erosion Hazard
			soon as possible.
<b>Iredell loam (IrB, C, D)</b> District range: 5%	Moderately deep soils found on broad ridges and upper side slopes from 0 to 15%. Surface texture is loam; upper subsoil is clay, which intergrades into a layer of sandy clay. This soil has a perched water table at depths from 1 to 2 feet during the winter and early spring.	Moderate – Use recommended only during drier periods to prevent rutting.	Slight
<b>Molena loamy sand (MoC)</b> District range: <1%	Deep and somewhat excessively drained soils found on high stream terraces, with slopes from 6 to 15%. Surface texture is loamy sand; upper subsoil is loamy sand that intergrades into loamy fine sand.	Moderate	Slight
<b>Pacolet sandy loam (PaB, C, D)</b> District range: 5%	Moderately deep, well-drained soils found on broad ridge tops and upper slopes of 2 to 15%. Topsoil is sandy loam, the upper subsoil is clay loam and the lower subsoil is sandy loam.	Slight	Slight
<b>Toccoa-Cartecay complex (TC)</b> District range: <1%	Complex formed of deep; nearly level and well-drained Toccoa soils and somewhat poorly drained Cartecay soils. Toccoa soils are on very young natural levees and stream banks, and Cartecay soils are on adjacent flat or slightly depressional areas of the floodplains. This map unit floods on an average of more than once every 2 years during the period of December to March, with a duration of from 2 to 7 days each time.	Slight for Toccoa Moderate for Cartecay - Use recommended only during drier periods to avoid rutting.	Slight (for both soils)
<b>Wehadkee and Chewacla (WC)</b> District range: <1%	Consists of deep, nearly level, and poorly drained to somewhat poorly drained soils on broad floodplains. This map unit floods on an average of more than once every 2 years during the period of November to June, with a duration of 2 to 7 days each time. A seasonal water table is at the surface or within 30 inches of the surface between November and May. NOTE: The Wehadkee soils are classified as hydric and may meet the requirements for a jurisdictional wetland based on site-specific conditions.	Moderate for Chewacla Severe for Wehadkee – Use recommended only during drier periods to prevent rutting.	Slight (for both soils)
<b>Wickham sandy loam (WcC, D)</b> District range: 10%	Deep well drained clay loam soils on rounded high stream terraces with slopes from 4 to 15%. Surface layer is sandy loam, the upper subsoil is loam, and the lower subsoil is sandy clay loam. A similar soil is Wickham sandy loam, rarely flooded (WhB).	Slight	Slight
<b>Wilkes sandy loam eroded (WkC2, D2, E3)</b>	Shallow, well-drained soils on narrow ridge tops and side slopes with slopes from 6 to 35%. This soil has a very thin surface layer, rills and some shallow gullies due to moderate past erosion. Surface layer is sandy loam; the upper and lower	Moderate	Severe – Avoid exposing soils. If exposed, re-vegetate as soon as

Soil Series	Description	Equipment Limitation	Erosion Hazard
District range: 10%	subsoil is sandy clay loam.		possible.
<b>Altavista sandy loam (Alb)</b> District range: <1%	Deep, moderately well drained soils on low stream terraces immediately adjacent to floodplains. Slopes range from 2 to 6%. Surface layer is sandy loam, the upper subsoil is sandy clay loam and clay loam, and lower subsoil is sandy clay loam. This soil may have a seasonal high water table at a depth from 1.5 to 2.5 feet from late fall to early spring.	Moderate – Limits due to seasonal high water table	Slight
<b>Louisburg sandy loam eroded and severely eroded (LoE2, LoE3)</b> District range: <1%	Moderately deep, well drained soils on steep side slopes and hillsides with slopes of 20 to 35%. Past farming practices have caused moderate to severe erosion as evidenced by rills, galled infestations, and some shallow gullies. The surface layer is a sandy loam with from 10 to 15% small cobbles, and the subsoil is sandy clay loam.	Severe	Severe
<b>Wedowee variant and Pacolet variant sandy loam eroded and severely eroded WPB2/3, WPC2/3, WPD2/3, WeE2/3)</b> District range: <1%	Moderately deep, well drained soils on side slopes and ridge tops from 2 to 35% slopes. Past farming practices have caused moderate to severe erosion as evidenced by rills, galled infestations, and some shallow gullies. The surface layer is a coarse sandy loam, and the subsoil is sandy clay.	Slight to moderate	Slight to moderate
<b>Congaree sandy loam (Co)</b> District range: <1%	Nearly level, well-drained soils found on major floodplains in the Piedmont. Slopes range from 0 to 2%. Flooding occurs on portions of this mapping unit every winter.	Slight; recommend use only during drier periods to prevent rutting.	Slight
<b>Starr loam (St)</b> District range: <1%	Nearly level, well-drained soils found on tributary floodplains of the Piedmont. Slopes range from 0 to 2%. Flooding occurs every 2 to 20 years during unusually wet winters.	Slight, but use is recommended only during drier periods to prevent rutting.	Slight



## APPENDIX J Project Area

**Suppression of Southern Pine Beetle in Red-cockaded Woodpecker Sub-HMA  
Oconee National Forest, Jasper County, Georgia  
(Critical Red-cockaded Woodpecker Habitat: Pine and Pine-Hardwood  
Stands within Red-cockaded Woodpecker Subhabitat Management Area)**





## APPENDIX K

### Comments Received During 30-Day Comment Period

Comments were received during the 30-day comment period from the following:

1. **Rene Voss - John Muir Project/Sierra Club** (e-mail sent 10/26/00 and personal communication with District Ranger Bernie Gyant, 11/30/00)
  - A. **Prioritizing Treatment Areas:** Mr. Voss would like the Forest Service to prioritize areas within the Red-cockaded Woodpecker (RCW) Subhabitat Management Area (Sub-HMA) that will receive treatment for cut-and-remove suppression. **Reply:** Prioritization strategies for cut and remove are addressed within the Environment Assessment (EA) (Alternative 2, Chapter 2) and in the Appendix B (Mitigation Methods and Monitoring) to the EA.
  - B. **Sub-Optimal Habitat:** In Sub-HMA areas, which are not optimal RCW habitat, Mr. Voss would like to see less aggressive suppression activities. “Instead these areas should be allowed to return to a more diverse species mix.” **Reply:** Prioritization strategies for treatment areas are addressed within the EA (Chapter 2, Alternatives, Alternative 2: Proposed Action) and in the Appendix B to the EA. Forest restoration activities are not within the scope of this decision.
  - C. **The Natural Role of Southern Pine Beetle (SPB):** “In those areas where RCW habitat is not threatened, SPB suppression should be done only using the cut and leave method.” **Reply:** The geographic scope of this decision, the RCW Sub-HMA, is designated critical habitat for the recovery of the RCW. Refer to Chapter 2 of the EA and Appendix B of the EA for suppression implementation strategies.
  - D. **Using methods other than timber sales for project:** **Reply:** This issue is outside the scope of this project analysis. The project’s scope is to suppress SPB infestations within the national forest.
  - E. **Forest Plan Amendments 18 and 19.** **Reply:** This issue is outside the scope of this project analysis. Please refer to the Amendments 18 and 19 available on the forest’s website at [www.fs.fed.us/conf/](http://www.fs.fed.us/conf/)
2. **Bryan Bird - Forest Conservation Council** (letter sent 10/23/00)
  - A. **Socioeconomic Benefits:** Mr. Bird refers to the SPB suppression in the RCW Sub-HMA as a “timber sale project.” **Reply:** This project proposal is not a timber sale project, but a proposal to control the spread of SPB infestation throughout the RCW’s designated critical habitat (or Sub-HMA).

“The EA and project record fail to place any economic value on existing uses and functions of the sale area, including recreation, flood control, pest control, carbon sequestering and many other ‘ecosystem services’.” **Reply:** There will be no loss of the existing uses and functions of the sub-HMA as a result of SPB-suppression treatments; therefore, they do not need economic analysis.

- B. Value of Unlogged Forest: **Reply:** This project proposal to control the spread of SPB infestations throughout the RCW’s designated critical habitat (or Sub-HMA). The southern pine beetle is the most destructive insect pest of pine forests throughout the Southern United States. When present in low numbers they attack

severely stressed or dying trees and are not of much consequence. However, during epidemics, the SPB attacks and kills even the most vigorous and healthy of pine trees. The Oconee National Forest is experiencing an epidemic proportion of SPB infestations. This proposal is necessary to take quick action to control SPB-infested infestations as soon as they are detected. This in turn would preserve habitat for recovery of the federally endangered RCW population on the Oconee National Forest. Section 7 (a)(1) of the Endangered Species Act of 1973, requires Federal agencies such as the Forest Service to use their authorities to further the conservation of listed species. Conditions are in place for potential catastrophic losses of mature pine trees (RCW-designated critical habitat). Given the current drought situation, and the resulting stress on the pine trees, it is likely that the epidemic will continue into 2002 (*see* Final Environment Impact Statement for the Suppression of the Southern Pine Beetle and Forest Service Southern Research Station’s website at <http://www.srs.fs.fed.us>).



**Pine Trees Attacked by Southern Pine Beetle**

- C. Range of Alternatives: “A non-commercial restoration alternative for the SPB Suppression in Sub-HMA Timber Sale should have been analyzed.” **Reply:** Again, this proposal is not a commercial timber sale project. It is a proposal to control the spread of SPB infestations throughout the RCW’s designated critical habitat (or Sub-HMA). Forest restoration objectives are outside the scope of this project.

- D. Species Viability: “The SPB Suppression in Sub-HMA Timber Sale includes commercial harvest, ground-disturbing activities associated with timber harvest, and other vegetative manipulation. These activities are likely to jeopardize the viability of . . . threatened, endangered, and sensitive species, as well as management indicator species.” **Reply:** Just the opposite, without prompt SPB suppression, the designated critical habitat for the endangered SPB will be impacted, put-

ting RCW recovery at risk. Refer to Chapter 1 (Proposed Action) of the EA for MIS analysis.

“For many of these species, the Forest Service has no up-to-date population data.”

**Reply:** Please refer to Appendix G, Management Indicator Species, and “Management Indicator Species Population and Habitat Trends” document available on the forest’s website at [www.fs.fed.us/conf/](http://www.fs.fed.us/conf/).

E. Cumulative Effects: “Cumulative impacts are analyzed in context only of timber harvest.” **Reply:** Again, this project is not a timber harvest; it is a proposal to control the spread of SPB infestations throughout the RCW’s designated critical habitat (or Sub-HMA). Cumulative effects are analyzed in Chapter 3 (Affected Environment) of the Environmental Assessment.

**3. Clanton Black - University of Georgia Research Professor of Biochemistry and Molecular Biology** (letter dated 10/3/00)

“I strongly encourage the decision to be: cut and remove pines killed by SPB.”

**4. Angela and Brent Martin: Forest Watch** (personal communication with District Ranger Bernie Gyant, 11/13/00)

The Martins concurred with the EA and the proposed Alternative 2.



**APPENDIX L**  
**Biological Evaluation**