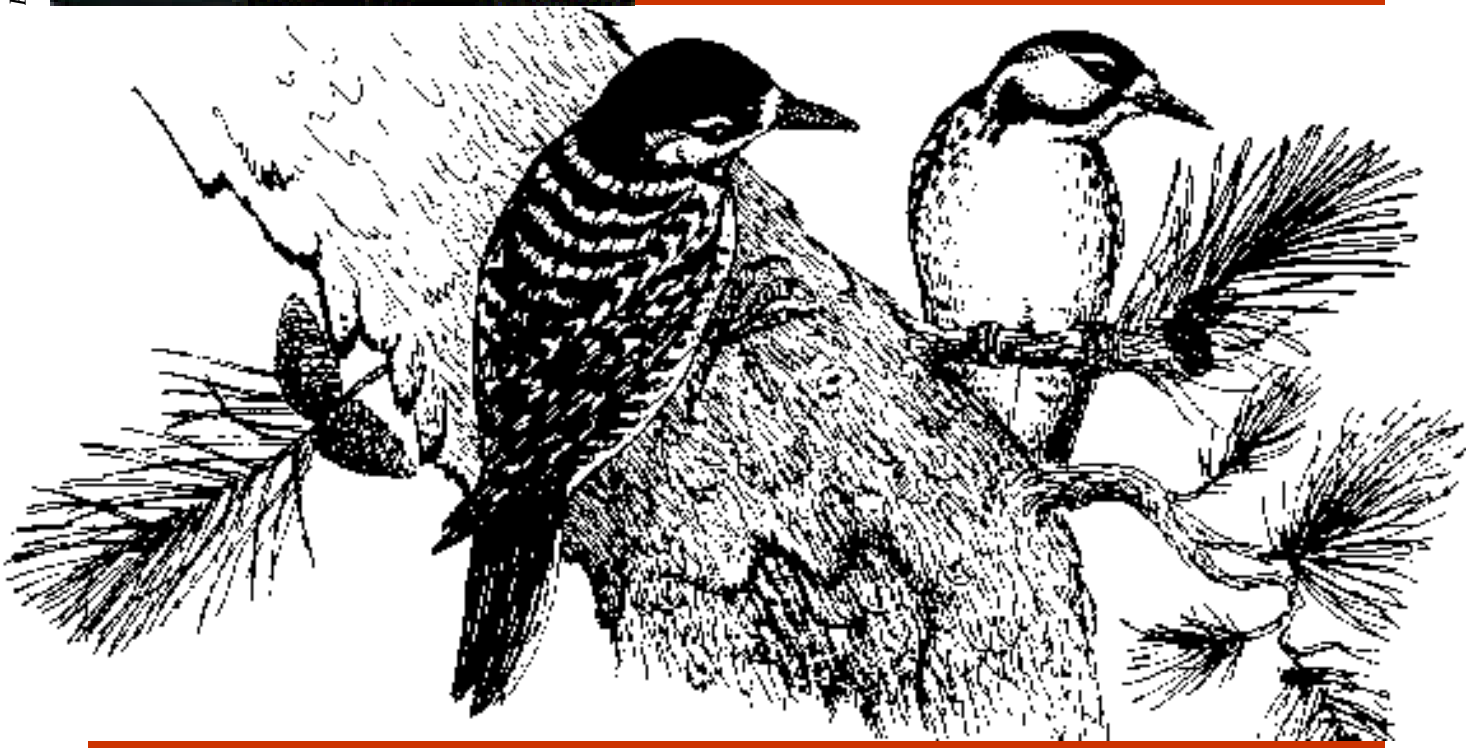
*Photo Credit: U. S. Fish and Wildlife Service; USFWS/Line Art by Robert Shallenberger*

# RED-COCKADED WOODPECKER HABITAT RESTORATION PROJECT

## Environmental Assessment

**August 2004**



**U.S. Department of Agriculture, Forest Service**
**Chattahoochee and Oconee National Forests**

# Red-Cockaded Woodpecker Habitat Restoration Project

## Environmental Assessment

**Chattahoochee and Oconee National Forests**
**Jasper County, Georgia**

**August 2004**


**U.S. Department of Agriculture**
**Forest Service**

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| BA | Basal Area |
| BMP | Best Management Practice |
| CAA | Clean Air Act |
| CCF | 100 Cubic Feet |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| ESA | Endangered Species Act |
| FONSI | Finding of No Significant Impact |
| FSH | Forest Service Handbook |
| FSM | Forest Service Manual |
| GDNR | Georgia Department of Natural Resources |
| GNHP | Georgia Natural Heritage Program |
| HMA | Habitat Management Area |
| KV | Knutson-Vandenberg |
| MIS | Management Indicator Species |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NRHP | National Register of Historic Places |
| NWI | National Wetlands Inventory |
| PILT | Payments in Lieu of Taxes |
| PETS | Proposed, Endangered, Threatened, and Sensitive |
| RCW | Red-cockaded Woodpecker |
| ROD | Record of Decision |
| SHPO | State Historic Preservation Officer |
| SIO | Scenic Integrity Objectives |
| SPB | Southern Pine Beetle |
| TMDL | Total Maximum Daily Load |
| USC | United States Code |
| USDA | United States Department of Agriculture |
| USEPA | United States Environmental Protection Agency |
| USFS | United States Forest Service |
| USFWS | United States Fish and Wildlife Service |
| WMA | Watershed Management Area |

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# 1.0 INTRODUCTION

This environmental assessment (EA) documents the results of a study of the potential environmental impacts of actions proposed by the United States Department of Agriculture (USDA), Forest Service (USFS) to restore habitat needed for the recovery of the Federally endangered red-cockaded woodpecker (RCW) (*Picioles borealis*) on the Oconee Ranger District of the Chattahoochee-Oconee National Forest in Georgia.

This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code (USC) 4321 et seq.), which requires an environmental analysis for Federal Actions having the potential to impact the quality of the human environment; the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) 1500 through 1508) for implementing NEPA; Forest Service Procedures for Implementing CEQ regulations (Forest Service Manual (FSM) Chapter 1950); and the Forest Service Policy and Procedures Handbook (Forest Service Handbook (FSH) 1909.15).

A key objective of NEPA is to help Federal agency officials make well-informed decisions about agency actions. The District Ranger on the Oconee National Forest is faced with a decision as to what, if anything, the USFS should do to restore habitat for the RCW within the Sub-Habitat Management Area on the Oconee National Forest to aid in the recovery of the species. This decision will be made within the overall management framework already established in the:

- *Land and Resource Management Plan for the Chattahoochee-Oconee National Forests* (Forest Plan, signed January 2004), and its accompanying EIS and Record of Decision (ROD);
- *Vegetation Management in the Coastal Plain/Piedmont Final EIS* (Volumes I and II) *and Supplement*; and
- *Revised Red-Cockaded Woodpecker Recovery Plan* (Recovery Plan, signed January 2003), prepared by the United States Fish and Wildlife Service (USFWS).

The Forest Plan, EIS, and Recovery Plan establish overall rules and guidance for actions taken within the Oconee National Forest. Therefore, the alternative courses of action considered in this EA were crafted to be consistent with the concepts established in the above documents.

## 1.1 BACKGROUND

The RCW is endemic to open, mature and old-growth pine ecosystems in the southeastern United States. Due to a nearly complete loss of habitat, and subsequent extreme decline in population size, the RCW was federally listed as endangered in 1970. Currently, less than three percent of the species' former population size exists (USFWS, 2003a). The Oconee National Forest (including the Hitchiti Experimental Forest) and the adjacent Piedmont National Wildlife Refuge both contain remnant RCW populations and the potential to support many more clusters, or family groups, of these woodpeckers.

In 1995, the USFS, Region 8 ROD for the *Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region* EIS directed National Forests to delineate Habitat Management Areas (HMAs) to support the recovery of the RCW. The management direction on the Oconee National Forest designated 52,966 acres of the Forest as a HMA for the RCW (USFS, 2001).

According to the revised RCW Recovery Plan, the Oconee National Forest and Piedmont National Wildlife Refuge together make up one secondary core population of RCW, referred to as the Piedmont Recovery Unit. The plan defines a secondary core population as "a population identified in recovery criteria that will hold at least 250 potential breeding groups at the time of and after delisting." In 2000, the Piedmont Recovery Unit had 59 breeding pairs—20 on the Oconee National Forest and 39 on the Piedmont National Wildlife Refuge (USFWS, 2003a). To bring the RCW population in the Piedmont Unit up to the recovery objective of 250 breeding pairs, the USFS has developed a recovery program in accordance with the objectives and direction provided in the revised RCW Recovery Plan (January 2003). As part of this recovery program, the USFS, in coordination with the USFWS plans to translocate (bring in adult birds from another population) RCWs from a population with an excess number of birds to repopulate proposed habitat sites on the Onocee National Forest. In order to successfully translocate RCW breeding pairs, the proposed translocation sites must have suitable RCW foraging and nesting habitat. This habitat can be obtained by vegetation manipulation and other silvicultural methods.

As a result of several lawsuits dating back to the early 1990s, the Chattahoochee-Oconee National Forest has had to withdraw a number of projects and timber sales on the Forest, which has affected the ability to meet certain natural resource objectives. In addition, several needed resource management activities on the Forest have not been conducted in recent years due to lack of appropriated funds or not being eligible for KV (Knutson-Vandenberg) dollars. With the exception of a few activities to address the southern pine beetle (SPB) and some prescribed burning, there has been no active management to address RCW habitat needs on the Oconee National Forest.

# 1.2 PROJECT AREA DESCRIPTION

The project area is located on the Oconee Ranger District of the Chattahoochee-Oconee National Forest in Jasper County, Georgia, approximately six miles southeast of Monticello (see **Figure 1.2-1**). The project area is located within a RCW Sub-HMA and encompasses approximately 7,100 acres of National Forest Service land adjacent to the Piedmont National Wildlife Refuge within Compartments 113, 114, 117, 118, and 119. The project area has been treated with periodic prescribed burning by the USFS since the early to mid-1980s for the purposes of hazardous fuels reduction and wildlife habitat improvements, and will continue to be prescribed burned in the future.

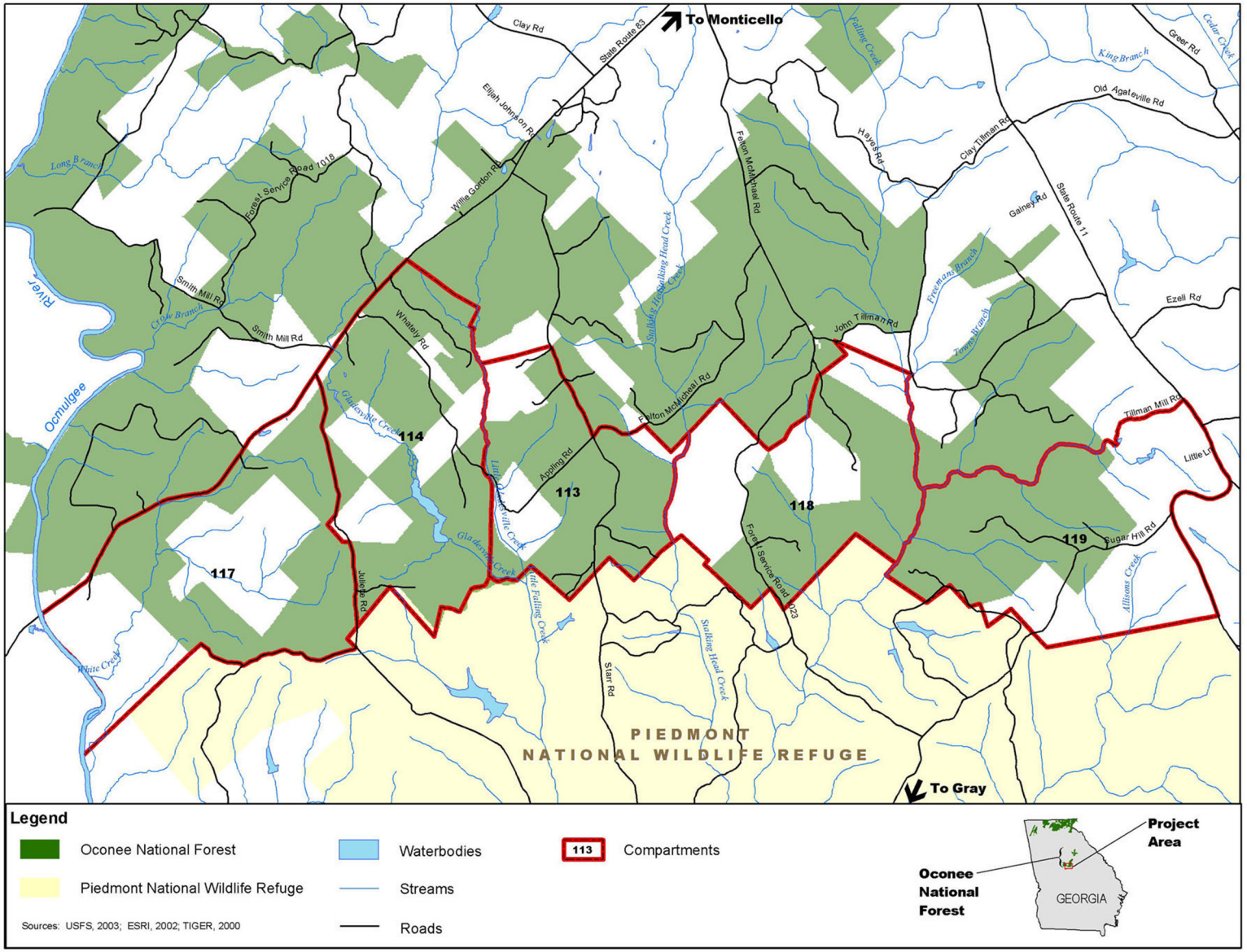


**Figure 1.2-1: Location of the Project Area**

# 1.3 PURPOSE AND NEED FOR ACTION

Under the Endangered Species Act (ESA), there are legislative requirements to positively manage for endangered species like the RCW on Federal lands. A prime objective of the Oconee National Forest is to follow the ESA by providing habitat for the recovery of the RCW by restoring and managing a pine ecosystem, which furnishes preferred habitat for RCW foraging and nesting.

Existing habitat is not suitable for the RCW with in the project area on the Oconee National Forest. A majority of the pine stands within the project area have excessive amounts of pine stems beyond the preferred habitat requirements (see Revised RCW Recovery Plan). Preferred habitat is between 40 and 70 basal area (BA), while current stand information within the project area shows basal areas over 100. Thus, at present, stands do not provide the open park-like stands that the RCW needs for suitable habitat. RCWs require open areas of mature pines 60 years and older for nesting. Foraging habitats vary in age but usually areas that are pine savannas with little, if any, midstory of hardwood (USFWS, 2003a).

The management of the RCW is currently listed as Goal 51 and Management Prescriptions 8.D and 8.D.1 in the Chattahoochee-Oconee Forest Plan (USFS, 2004a). Desired conditions for the RCW are stated here. The Oconee National Forest is not currently meeting these desired conditions. Under the ESA and RCW Recovery Plan, the Forest RCW population has been declared a Recovery population and the Forest is mandated by law to bring about this recovery. Habitat management is clearly necessary for the recovery of the species and therefore meeting the purpose and need.

## 1.3.1 Summary of Proposed Action

The following is a general description of the proposed action (Alternative 2). A more detailed description of each activity and connected actions can be found in Section 2.2.

a) Thin approximately 3,969 acres in Compartments 113, 114, 117, 118, 119;
b) Conduct prescribed burning of 7,083 acres, including growing season burns within recruitment stands to control midstory vegetation;
c) Develop ten 10- to 20-acre RCW recruitment sites approximately ½-mile apart (USFWS guidelines) in Compartment 113 (stands 1, 5, 9, 11, 13, 15, 16, 24, 29, 30); rehabilitate old recruitment sites on Compartments 114 (stands 1, 19-22, 31, 32, 58, 59), 117 (stands 3, 5, 6, 8-10, 12, 15, 18, 19, 22, 27, 32-34, 36, 37), 118 (stands 1, 2, 8, 10, 11, 13, 14, 16-19, 23, 25, 28, 32), and 119 (stands 1, 2, 6, 8, 14, 25);
d) Create 40 RCW artificial cavities (at least 4 cavities for each RCW recruitment site);
e) Use a combination of herbicides and mechanical methods to control noxious weeds (kudzu and privet) and midstory vegetation on approximately 2,417 acres;
f) Use and maintain existing road system;
g) Construct approximately 1 mile of temporary roads on Compartments 113 and 119;
h) Reopen approximately 25.2 miles of temporary roads and associated log landings within the project area to access timber stands;

i) Provide nesting structures for squirrels within the recruitment stands: 2 structures within each new RCW recruitment area (20 structures total);
j) Restore 2 acres of gully on Compartment 113 stand 9;
k) Reforest approximately 25 acres of old SPB stands scattered throughout the project area with pine seedlings;
l) Develop wildlife viewing areas, which would only include a bench and signage, at two sites: one on Compartment 114 stand 58 and one on Compartment 113 stand 1.

# 1.4 DECISION FRAMEWORK

Given the purpose and need, the Responsible Official (Oconee District Ranger) will review the Proposed Action and the other alternatives in order to make the following decision:

- Select the No Action Alternative (deferring action); or
- Select an action alternative; or
- Select a modified action alternative.

Should a decision be made to select an action alternative or a modification of an action alternative, the actions would be implemented in the next five years.

# 1.5 PUBLIC INVOLVEMENT

Public involvement during the NEPA process includes, at a minimum, public scoping, public review of the EA, and responses to comments submitted by the public. In accordance with CEQ's regulations for implementing NEPA, the Forest has involved the interested and affected public during the preparation of this EA.

The purpose of the scoping process is to determine the scope of issues to be addressed in the EA and to identify major or key issues relating to the Proposed Action. Scoping for this project began when the USFS hosted an open house and field trip on March 29, 2002, to which all cooperative agencies (Federal and State), conservation groups, and environmental organizations, such as Georgia Forestwatch and the Sierra Club, were invited for a presentation and site visit of the proposed project sites. Sixteen people participated on the field trip. Issues that were discussed were: providing suitable habitat; timber removal options, stewardship project, and importance of the recovery of the RCW. The various interests identified the need to protect and provide habitat for the RCW by reducing the high density stands to lower basal areas.

On June 17, 2002, a scoping letter explaining the proposal to improve the habitat for translocation of RCW to meet the requirements of the Recovery Plan and RCW EIS within site specific information was mailed to 65 individuals and organizations that had previously expressed previous interest in the management of the Oconee Ranger District. In addition, the proposed action appeared in both print and Internet versions of the quarterly Scheduled of Proposed Actions for the Chattahoochee –Oconee National Forest in Georgia 2002. A legal

notice requesting comments was also published in the *Eatonton Messenger* in June 2002. A total of 4 written responses were received during scoping.

Another scoping letter for the proposed vegetation management was sent out to 65 individuals on April 3, 2003 to revise the project site to the Sub-HMA with a change of compartments. The original proposed action was for the HMA-Jones-Putnam County; the second scoping letter identified the Jasper County area Compartments 113, 114, 117, 118, and 119. Only 1 response was received. A legal notice was placed in the *Eatonton Messenger* in April 2003. Another open house meeting was scheduled for April 28, 2003 at the district office. Twenty people attended the meeting, at which the Forest displayed maps of the proposed area and gave a short presentation on the proposal. The scoping period announcement was also placed on the Chattahoochee-Oconee National Forest Schedule of Proposed Actions for the period of April 1 to June 2003. No written comments were received. Katherine Groves, John Moore, and Phillip Jordan gave verbal agreement in support of the project. Jimmy Rickard, biologist for USFWS, also concurred with the proposed action.

A copy of this EA was sent to all persons who requested a copy during the scoping process and other pertinent agencies and individuals potentially affected by the Proposed Action. This EA will be available for public review for a minimum of 30 days. During this public review period, written comments on the EA are invited from the public and interested agencies. All comments received on the EA will be reviewed by multiple parties, and appropriate responses will be prepared. Appendix E of this EA contains a more detailed discussion of this process.

# 1.6 ISSUES AND SCOPE OF THE EA

Issues can be defined as the relationship between the Proposed Action or its alternatives and the human and natural environment. Issues were identified by the Forest, State and Federal agencies, a review of similar projects, and by the public during the scoping process.

Issues are used to define and focus the discussion of the affected environment for each resource area and the analysis of the potential environmental consequences of an action. Issues were separated into two groups: key (or major) and non-key. Key issues are defined as those directly or indirectly caused by implementing the Proposed Action or its alternatives. Non-key issues are identified as those outside the scope of this EA; already decided by law, regulation, the Forest Plan, or other higher-level decision; irrelevant to the decision to be made; or conjectural and not supported by scientific or factual evidence. In addition, resource areas that would remain unaffected by any of the alternatives are considered non-key issues.

A summary of issues and resource areas analyzed in this EA is presented in Section 1.6.1 below. Those issues and resource areas that were dismissed from further analysis are discussed in Section 1.6.2, along with the rationale for their dismissal.

## 1.6.1 Key or Major Issues

The following two key issues are analyzed in this EA:

### *Water Quality (Key Issue #1)*

Protection of water quality is required by the Federal Clean Water Act (CWA), as well as Georgia water quality regulations. Timber management activities could affect water quality, and subsequently, aquatic species, by exposing soils, leading to increased erosion during storm events and subsequent higher suspended solid loads and turbidity in downstream surface waters. In addition, water quality could be degraded by the use of herbicides. Activities within riparian areas and wetlands have the potential to degrade water quality. Therefore, impacts to water quality are analyzed in this EA.

### *Vegetation and Wildlife, Including Proposed, Endangered, Threatened, and Sensitive (PETS) Species (Key Issue #2)*

Given the purpose and need of the project – to restore habitat for the RCW, a federally endangered animal species, both vegetation and wildlife, including PETS species, would be affected by the project. Plant communities in the project area would be affected by timber management, and even more so cumulatively with prescribed fire.

## 1.6.2 Non-Key Issues

The following issues and resources were dismissed from further analysis in this EA:

### *Soil Resources (Non-Key Issue)*

Resource management activities, such as timber harvesting, prescribed burning, gully restoration, roadwork, etc., under all action alternatives could potentially result in increased surface water runoff and soil erosion in the project area as a result of heavy equipment use and associated soil compaction, soil disturbance, and removal of vegetation. In addition, herbicide application within the project area under Alternatives 2 and 4 has the potential to contaminate soils.

The soils in the project area have clayey, textured subsoils and loamy surfaces, and were formed in place (residuum) from the metamorphic bedrock underlying the area (USFS, 2001). Thirteen soil series are present on National Forest lands within the project area (Compartments 113, 114, 117, 118, and 119). Of these 13, 8 soils series cover the majority of the land within the project area. These soil series are listed in **Table 1.6-1**, along with their general characteristics.

| Table 1.6-1. Soil Series and Characteristics Covering the Majority of the Project Area | | | | | | |
|---|---|---|---|---|---|---|
| **Soil Series** | **Depth Class** | **Drainage Class** | **Perme-ability** | **General Location** | **Slope (%)** | **Other Characteristics** |
| Chewacla | Very Deep | Somewhat Poorly Drained | Moderate | Flood Plains | 0-2 | Fine silt loam; semi-active; very strongly acid to slightly acid |
| Gwinnett | Deep | Well-Drained | Moderate | Ridges, Hillsides | 6-25 | Fine, sandy clay loam; very strongly acid to strongly acid |
| Iredell | Deep and Very Deep | Moderately Well-Drained | Slow | Upland Flats, Ridges, Hillsides | 0-10 | Fine, sandy loam; at surface moderately acid to neutral; below surface slightly acid to mildly alkaline |
| Lloyd | Very Deep | Well-Drained | Moderate | Ridges, Hillsides | 2-30 | Fine, loamy; slightly acid to very strongly acid |
| Madison | Very Deep | Well-Drained | Moderate | Hillsides | 6-30 | Fine, sandy loam; very strongly acid or strongly acid |
| Pacolet | Very Deep | Well-Drained | Moderate | Ridges, Hillsides | 2-25 | Fine, sandy loam; very strongly acid to strongly acid |
| Wilkes | Shallow | Well-Drained | Moderately Slow | Narrow Ridges, Hillsides | 6-35 | Loamy; sandy; active; upper layers strongly acid to slightly acid, lower layers moderately acid to slightly acid |
| Wynott | Moderately Deep | Well Drained | Slow | Hillsides | 15-35 | Fine, sandy loam; active; strongly acid to slightly acid |

Source: NRCS, 1999

Only minimal adverse effects on soils are anticipated under any of the action alternatives because the soil types within the project area are predominantly deep and well-drained, reducing the potential for compaction, and would not be taken out of production with temporary road construction. In addition, routine implementation of Forest Plan standards, *Georgia's Best Management Practices for Forestry* (GDNR et al., 1999), and other mitigation measures (see Section 2.6 and Appendix C) would substantially reduce any potential impacts from temporary road construction and reconstruction, thinning, and prescribed burning on soil resources. Herbicides proposed for use under Alternatives 2 and 4 would be applied manually to minimize drift and soil contact. Other proposed activities (gully restoration, roadwork, etc.) would generally have beneficial impacts on soils over the long-term. Overall, only minor, short-term, localized adverse impacts on soils would occur under Alternatives 2, 3, and 4 (with Alternative 4 having the smallest impact of the action alternatives due to the smaller size of the project area). No adverse impacts on soils are anticipated under Alternative 1. Therefore, impacts to soils are not analyzed further in this EA.

## *Air Quality (Non-Key Issue)*

Consideration of air quality impacts is required by the Federal Clean Air Act (CAA). Air quality has the potential to be degraded temporarily during management activities by dust/particulates and emissions from heavy equipment. Minor increases in carbon monoxide, nitrogen oxides, hydrocarbons, and particulate matter would be expected as a result of these activities. None of these increases would result in a change in attainment status of the area, and all impacts on air quality would be short-term. Air quality may also be affected temporarily by prescribed fire.

All prescribed fires on the Forest are planned in coordination with the Georgia Department of Natural Resources (GDNR), which regulates prescribed burning in the State in accordance with the State Implementation Plan (USFS, 2003a). The low population density of the affected Forest compartments, distance to sensitive receptors, and need to prepare prescribed burn plans are highly likely to satisfactorily mitigate any potential impacts on air quality. Therefore, air quality is dismissed from additional analysis.

## *Herbicide Use (Non-Key Issue)*

Herbicide treatments to eliminate unwanted species (including noxious weeds and certain midstory species) would be done within RCW foraging and nesting areas under Alternatives 2 and 4 (see Section 2.2 below). After thinning operations are completed, prescribed fire would be used to reduce the existing ground fuels and aid in the reduction of unwanted vegetation. Treatments needed to control unwanted vegetation would be determined upon post-thinning evaluations. Herbicide treatments, such as foliar spray and/or injection applications or felling (cut stems) with stump treatment applications, may be chosen for the best control methods. A combination of foliar spray mixtures may be used for better control of unwanted species, depending on species composition. When implemented, foliar spray applications would be applied to unwanted vegetation less than 7 feet in height. Felling with stump treatment applications or injection applications would be used to treat unwanted vegetation over 7 feet in height. Areas with older and/or dense growth of unwanted vegetation may have selective treatments with herbicides prior to prescribed fire applications to better manage the desired control. Some of these areas may also have post prescribed fire selective treatments with herbicides. Areas where prescribed fire controls most of the unwanted vegetation would only have selective spot treatments with herbicides. Some areas may have unwanted vegetation controlled by prescribed fire and the use of herbicides may not be necessary.

The Record of Decision for the *Vegetation Management in the Coastal Plain/Piedmont Final Environmental Impact Statement* (FEIS) limits the application of herbicide active ingredients (a.i.) per acre. All herbicide applications will be prescribed not to exceed the a.i. limitations per acre. [Refer to the Forest Plan EIS (p. 3-382) for average number of stems per acre. The Piedmont/Oconee National Forest is represented by the code "P25p" in Table 3-150 of the EIS.]

Herbicide types, application methods, mixtures, and rates that may be applied upon post-thinning evaluations are presented in **Table 1.6-2**.

**Table 1.6-2. Herbicide Types, Application Methods, Mixtures, and Rates**

| Type | Application Method | Purpose | Mixture | Rate (Maximum Limit) |
|---|---|---|---|---|
| Surfactant | N/A | Added to non-aquatic mixtures for better leaf surface coverage | No more than a 1% solution of surfactant | 0.90 lbs a.i./acre |
| Glyphosate (has aquatic label if surfactant not added) | Injection or stump surface treatment | Control of hardwood and conifer species | 50% solution (with water) | 0.65 gallons of mixture applied per acre (1.3 lbs a.i./acre) |

| | | | | |
|---|---|---|---|---|
| | Foliar spray | Early season--controls hardwood and most conifer species. Late season--controls hardwood species | 3% solution (with water) | 8.3 gallons of mixture applied per acre (1.0 lbs a.i./acre) |
| Imazapyr | Injection | Control of hardwood species | 25% solution (with water) | 3 gallons of mixture per acre (0.75 lbs a.i./acre). |
| | Foliar spray | Control of hardwood species | ½ ounce per gallon of water solution | 15 gallons of mixture per applied per acre, well below the 0.75 lbs a.i./acre limit |
| Clopyralid | Foliar spray | Control of Kudzu | ¼ ounce per gallon of water | 25 gallons of mixture applied per acre, well below the 0.75 lbs a.i./acre limit |
| Triclopyr (amine) | Injection and stump treatment | Control of hardwood and conifer species | 50% solution (with water) | 5 gallons of mixture per acre (4 lbs a.i./acre) |
| Triclopyr (ester) | Foliar spray | Control of hardwood and conifer species | 3% solution (with water) | 17 gallons of mixture applied per acre (2 lbs a.i./acre) |
| | Foliar spray | Control of invasive species such as privet and wisteria | 4% solution (with water) | 12.5 gallons of mixture per acre (2 lbs a.i./acre) |

The use of herbicides under Alternatives 2 and 4 may pose a risk to humans, fish, and/or wildlife. However, any herbicides applied would be done according to the labeling information and at the lowest rate effective at meeting project objectives in accordance with guidelines for protecting the environment. When labeling and application directions are followed and safety recommendations are implemented, minimal adverse effects are expected. The effects of the treatment would be limited to the trees in the immediate vicinity of the application areas. All herbicides would be ground-applied through manual methods, such as with low pressure backpack sprayers and/or cut surface treatments (stump treatment or injection), and application would be restricted during unfavorable weather conditions, such as high winds.

A project-specific risk assessment to determine risks to humans, fish, and wildlife from herbicide use under Alternatives 2 and 4 has been completed and is provided in Appendix F. This risk assessment determined that there would be no adverse effects on humans, wildlife, and fish from the use of herbicides under this project. In addition, with the provision of riparian buffer areas on stream zones, the risk of herbicide spills or movement into stream zones is further reduced. All applicable mitigation measures contained in the *Vegetation Management in the Coastal Plain/Piedmont Final EIS* (USFS, 1989a) would be followed. A complete discussion of the effects of herbicides is contained in this EIS, to which this document tiers. In addition, all herbicide applications would follow the guidelines of the Forest Plan and RCW Recovery Plan. Current risk assessments for the above-listed herbicides may be found at: www.fs.fed.us/foresthealth/pesticide/risk.htm.

The use of herbicides carries some risks to human health and safety, particularly to the applicator. This risk is reduced by requiring the applicator to be trained in safety precautions, proper use, and handling of herbicides. Other factors reducing the risk of herbicide use to human

health and safety is the low level of active ingredient per acre and placement of notice signs in areas where herbicide has been applied. The signs include information about the herbicide used, when it was applied, and who to contact for additional information. Appendix C of this EA also contains a list of standard mitigation measures for herbicide use that would be followed during this project.

There would be no effects from herbicide use under Alternatives 1 and 3, since herbicides would not be used under either of these alternatives.

## *Cultural Resources (Non-Key Issue)*

Consideration of potential effects on heritage resources is mandated by the National Historic Preservation Act (NHPA) and NEPA. Consequently, an archeological survey of compartments 113, 114,118, and 119 was conducted in 2003 (Webb & Associates, 2003); Compartment 117 had earlier been surveyed (Wood and Wood, 1985). The 1985 survey of Compartment 117 detected 2 historic (late 19$^{th}$/early 20$^{th}$ century) house sites located near roads. These sites are now protected, and concurrence from the Georgia State Historic Preservation Officer (SHPO) is on file in USFS archives.

The 2003 survey found that 26 archeological sites and 4 isolated finds within Compartments 113, 114, 118 and 119 are so severely disturbed, or are of such limited archeological value, as to be unlikely to yield important prehistoric or historical data under National Register of Historic Places (NRHP) criteria. Therefore, these sites were recommended as ineligible for the NRHP. Of the 6 remaining sites detected, 5 were recommended ineligible based on the results of previous investigations or the fact that the present survey did not identify cultural material or features at these locations. The eligibility of the remaining site could not be determined. This site will be protected until its NRHP status is determined. In addition, the open walls at 4 of these archeological sites will be fenced, capped, or filled to reduce hazards and protect any possibly valuable archeological data they may contain (Webb & Associates, 2003).

Of 5 cemeteries located within the project area, 4 were recommended ineligible for the NRHP and 1 (the Ambrose Cemetery) was recommended as eligible for the NRHP. All 5 cemeteries are protected under Georgia law (Abandoned Cemeteries and Burial Grounds Act), and thus, would be avoided during thinning, prescribed fire, and other forest management activities within the subject compartments. This avoidance would virtually eliminate any potential impacts on cultural resources, and thus this issue is dismissed from further analysis. The Georgia SHPO consultation letters for the current survey are attached to this EA in Appendix D.

## *Recreation (Non-Key Issue)*

Vegetation management activities have the potential to temporarily disrupt or displace recreational use in the five compartments due to the presence of workers and use of equipment. There are three hunt camps (Hillsboro, OIG, and Lungsfords Crossroads) within the project area, and one hunt camp (Deep Wells) located immediately adjacent to the project area. These hunt camps are primitive, and offer parking and camping areas. The hunt camps are used throughout

the year for camping, and are almost always fully occupied during hunting season. In addition, the Piedmont National Wildlife Refuge to the south of the project area offers game species hunting opportunities during a specified season. There are no recreational trails within or immediately adjacent to the project area. Fishing opportunities are provided in the Ocmulgee River on the western border of the project area, as well as in two public fishing areas on the Piedmont National Wildlife Refuge adjacent to the project area to the south (USFWS, 1998).

Alternative 1 would not result in any direct, adverse effects on recreation in the area. Temporary, adverse effects on recreation may result from these activities due to the presence of workers and equipment, temporary effects on the visual quality of the area, and noise generated from equipment and vehicles. These impacts would only affect recreation users and opportunities immediately surrounding the activity sites, and for the short duration that a particular site is being worked on. While recreational use of public lands would not be restricted during the proposed activities, it is likely that use would decline due to disturbance in the area, and as a result of signs posted to notify the public of the activities. There would remain many acres of forest surrounding the project area that would remain unaffected and available to recreationists.

Beneficial impacts on recreation are anticipated over the longer-term from Alternatives 2, 3, and 4. Thinning would result in increased visibility into forested areas, which would allow hunters to more easily identify game species and would provide a more manageable terrain for hiking. Wildlife viewing would also be enhanced. Reopening temporary roads in the area may allow hunters and hikers easier foot access to interior forest areas. However, unauthorized off-road vehicle (ORV) use may increase as a result of the open forest conditions created by thinning activities, particularly from unauthorized ORV riders using skid trails and logging landings. To reduce impacts from potential ORV use of the area, skid trails and logging decks would be placed away from known high use areas by at least 50 feet. In the event that ORV use and resource degradation is evident, mitigation measures, such as lopping and strategically scattering slash in the vicinity of skid trails and log landings (piles 1 to 2 feet above the ground) would be performed to discourage unauthorized ORV riding, but to still allow for foot access.

Overall, neither the adverse nor the beneficial impacts on recreation from Alternatives 2, 3, and 4 are of such a magnitude as to constitute a major issue; therefore, this is a non-key issue that is not addressed further in this EA.

## *Visual Resources (Non-Key Issue)*

Visual resources have the potential to be adversely affected by the presence of workers and equipment during management activities. In addition, vegetation management by thinning, herbicide use, and prescribed fire, as well as temporary road construction and reconstruction, could alter the appearance of the project area.

The majority of the project area has been assigned a spectrum of high/medium and low scenic integrity objectives (SIOs; USFS, 2004b). The majority of the forested stands within the project area currently have high basal areas and a closed canopy. However, since the late 1990s, part of the canopy has opened up in areas as a result of SPB infestations and subsequent pine mortality.

In 2000, cut-and-leave suppression was conducted on various SPB spots in the project area. Most spots resulted in canopy openings of less than 1 acre, and less than 10 acres were cut. Overall, the project area has relatively few viewers, with the primary viewers being hunters staying at the 3 year-round hunt camps within the project area, dispersed recreationists, and passersby on nearby roads. While gravel County roads transect forested areas in each of the compartments, they receive only limited use and do not have many viewers.

No direct impacts on visual quality would occur as a result of Alternative 1. Alternatives 2, 3, and 4 would result in short-term, minor, very localized impacts on visual quality from the presence of workers and equipment in the project area. Thinning activities, as well as the use of herbicides to open up the midstory under Alternatives 2 and 4, would alter the visual character of the project area for a longer period of time by making forest stands appear more open. These impacts would affect only viewers in the immediate vicinity of treated stands, and would be greater under Alternatives 2 and 3 than under Alternative 4 due to the smaller size of the area treated. The more open appearance may have different impacts on different viewers, as some viewers may prefer a more open and managed forested setting (and subsequently, greater visibility into forested stands) and others a more heavily vegetated forest. However, since there would remain a mixture of thinned and unthinned areas within the overall project area, as well as a range of age classes, any long-term, adverse impacts on visual quality would be localized and negligible. In accordance with Forest Plan direction, thinning activities would be planned to achieve natural-appearing edges in the foreground distance zones. Therefore, thinning operations would not result in the failure of any of the proposed treatment stands to meet SIOs.

Temporary road rehabilitation/construction (including skid trails and landings) would primarily have short-term effects on the visual quality of the area. Negative visual impacts associated with logging decks and skid trails would be minimized by locating these areas away from frequently used areas. The majority of temporary roads to be used were constructed about a decade ago, and contain mainly understory vegetation. No major clearing would be associated with reopening these roads, and reopening and reuse of these roads would not result in major changes in the visual quality of the landscape.

Up to 1 mile of new temporary roads would be constructed, and these may involve more vegetation clearing and greater landscape disturbance. Only very short stretches of new road would be constructed in any given area, and any clearing associated with these new roads is not anticipated to dominate the landscape or violate the SIOs of the project area. Although they would be occasionally used for administrative purposes, the majority of temporary roads would be seeded and allowed to revegetate following completion of activities. The only exceptions would be those temporary roads, skid trails, or landings to be permanently maintained as wildlife openings. These areas would remain open over the long-term, and would primarily contain early successional vegetation. These openings would be planned and designed so that their shapes appear natural in the landscape, and their presence does not significantly modify the landscape.

Other activities proposed under the action alternatives, including exotic species control and gully restoration, could have temporary, minor, adverse impacts on visual quality from dying vegetation and disturbance, but long-term impacts on visual quality would be beneficial. Since

no major impacts on visual quality would occur as a result of the project, impacts on visual quality are not discussed further in this EA.

## *Human Health and Safety (Non-Key Issue)*

All potential effects on worker and public safety under the action alternatives would be short-term, lasting, at most, a short period following completion of vegetation management activities. Thinning activities, road construction, rehabilitation, and maintenance, and several of the other proposed activities would require the use of heavy equipment. The use of heavy equipment and the movement of fallen timber present the highest potential for safety risks during these activities. Injuries to both workers and recreational users of the Forest could occur. Forest planning documents clearly require numerous safety precautions, as well as requirements for qualified personnel to conduct management actions. Equipment operators must demonstrate proficiency with the equipment and be licensed to operate it. In accordance with Forest Service Health and Safety Code Handbook (FSH 6709.11), vegetation management activities require all USFS workers to wear safety equipment, including hard hats, eye and ear protection, chaps, and fire retardant clothes. The USFS would stipulate these and other safety measures as part of the timber sale/services contract. In addition, since the project area is used for hunting, the USFS would stipulate in the contract that all workers wear orange vests, and not leave the project site without an orange vest being worn, in order to be visible to any nearby hunters. The USFS would make the contractor aware of the dates of the hunting season.

The USFS would notify the public of the proposed activities, locations of activities, and dangers at the sites prior to the onset of any activity. Notification would be made through newspaper releases, appropriate signage, and use of bulletin boards at information sites. The USFS would also post information on the project operations and times of project implementation on the Forest website. Most of the general public are already aware of logging, burning, and other Forest operations.

The private contractor would be responsible for adhering to public safety protection measures during all vegetation management and service activities. These requirements may include, but are not limited to: removal of slash and debris from skid roads to facilitate public foot traffic; immediate repair of any damage to roads and ditches during activities; and use of appropriate devices, such as barricades, where necessary, to control entry to any open, dangerous site.

In addition to the use of heavy equipment and site safety risks, proposed herbicide use under Alternatives 2 and 4 could potentially adversely affect worker health and safety, and to a lesser extent, public health and safety. As discussed above under the non-key issue *Herbicide Use*, a project-specific risk assessment to determine risks to humans, fish, and wildlife from herbicide use under Alternatives 2 and 4 has been completed and is provided in Appendix F. This risk assessment determined that there would be only negligible adverse effects on human health and safety from the use of herbicides under this project. All applicable mitigation measures contained in the *Vegetation Management in the Coastal Plain/Piedmont Final EIS* (USFS, 1989a) would be followed. A complete discussion of the effects of herbicides is contained in this EIS, to which this document tiers. Current risk assessments for the above-listed herbicides may be found at: www.fs.fed.us/foresthealth/pesticide/risk.htm.

The use of herbicides carries some risks to human health and safety, particularly to the applicator. This risk is reduced by requiring the applicator to be trained in safety precautions, proper use, and handling of herbicides. Other factors reducing the risk of herbicide use to human health and safety is the low level of active ingredient per acre and placement of notice signs in areas where herbicide has been applied. The signs include information about the herbicide used, when it was applied, and who to contact for additional information. Appendix C of this EA also contains a list of standard mitigation measures for herbicide use that would be followed during this project.

Since numerous measures to ensure worker and public safety would be in place during the proposed activities under all action alternatives, no significant adverse impacts on human health and safety would result from any of the alternatives. Any risks to workers or the public would be minor and short-term. Strict adherence to the safety measures described above and in Appendix C would minimize or eliminate adverse human health and safety effects.

## *Socioeconomics (Non-Key Issue)*

Counties with National Forest land within their boundaries are paid 25 percent of the monies received from natural resources extraction and consumption, such as timber harvest, mining, and recreation (USFS, 2004b). County revenues from these 25 percent funds vary annually, depending on timber harvest, mining, and recreation use that year. If these payments by the USFS do not add up to at least $1.75 per acre annually, then Payments in Lieu of Taxes (PILT) are used to address the shortfall. PILT payments are payments to local governments/counties containing federally owned lands to compensate for non-taxed (Federal) property under the jurisdiction of those governments/counties.

Trends in the levels of the 25 percent funds and PILT payments in the Chattahoochee-Oconee National Forests over time are very important to individual counties, which depend on them as an important part of their tax base. In the last decade or more, as a result in the decline of timber harvest, there has been a downward trend in 25 percent funds. Jasper County's 25 percent fund payments declined from $157,772 in 1986 to $44,358 in 1997, a 72 percent decline (see **Table 1.6-3**). While PILT payments have risen dramatically, it has not been enough to make up for the lost revenue.

**Table 1.6-3. 25 Percent Fund and PILT Payments to Jasper County from Oconee National Forest for Selected Years**

| Payment Type | 1986 | 1990 | 1992 | 1995 | 1997 | 1999 |
|---|---|---|---|---|---|---|
| 25 % Fund Payments | $157,772 | $136,425 | $136,394 | $11,933 | $44,358 | NA |
| PILT payments | NA | $2,698 | NA | NA | $18,350 | $13,097 |

The Secure Rural Schools and Community Self-Determination Act of 2000 (PL 106-393) gave counties options on how to contend with this funding shortfall that affected basic public facilities and services like roads and K-12 education. Counties could continue to receive 25 percent fund payments or elect to receive their share of the average of the three highest 25 percent payments

during the period from 1986 through 1999 (USFS, 2004b). The latter is called the full payment option. Jasper County has elected the full payment option (Ellis, 2003).

Under the action alternatives, thinning to benefit the RCW would occur within Compartments 113, 114, 117, 118, and 119. Both sawtimber and pole/pulpwood would be harvested, in the estimated volumes shown in **Table 1.6-4** (for Alternatives 2 and 3; Alternative 4 would have lower estimated volumes due to the smaller area proposed for thinning).

**Table 1.6-4. Estimated Volumes Proposed For Thinning From Selected Oconee National Forest Compartments and Predicted Range Of Revenues**

| Comp. | Sawtimber Volume (CCF) | Pole/Pulpwood Volume (CCF) | Predicted Range of Bids* | Hypothetical Range of 25 Percent Payments to County |
|---|---|---|---|---|
| 113 | 2200 | 1500 | $253,000 - $304,000 | |
| 114 | 1600 | 1000 | $183,000 - $220,000 | |
| 117 | 2760 | 1800 | $316,000 - $380,000 | |
| 118 | 1500 | 1000 | $172,000 - $206,000 | |
| 119 | 2350 | 1700 | $270,000 - $324,000 | |
| **Totals** | 10,410 | 7000 | $1,194,000 - $1,434,000 | $298,000 - $358,500** |

* Assuming minimum bid prices of $90 to $110/CCF (hundred cubic feet) for pine sawtimber and $5 to $7/CCF for pine pulpwood and bidding that ranged from minimum bid price to 20 percent above minimum price, rounded to nearest $1,000 (Walker, 2003).
** These are not annual payments, but spread out over the life of the project.

Given the likely range of annual 25 percent payments that would be made to Jasper County under Alternatives 2 and 3, these would not exceed the payments now being made under the "full payment option" described above. In other words, the average of the three highest-year 25 percent payments from 1986 through 1999 is greater than the likely 25 percent payment that would be realized from the proposed action. Therefore, none of the alternatives would have a fiscal impact on Jasper County government's budget, revenue, or expenditures.

## *Environmental Justice/Protection of Children (Non-Key Issue)*

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires that Federal agencies identify and address, as part of their action, any disproportionately high and adverse human health or environmental effects on minority or low-income populations. According to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directs Federal agencies to "identify and assess environmental health risks and safety risks that may disproportionately affect children" and to "ensure that [their] policies, programs, activities, and standards address disproportionate risks to children."

The proposed project is located within the boundaries of a National Forest, and thus, would not cause any displacement of any residents, nor would it eliminate any employment opportunities. While there are private residences interspersed with public lands within the project area, the area is sparsely populated. Most of the residences are considered lower-middle income with a mixture of minority and non-minority families, which may include some children. However,

there is not a disproportionate number of low-income, minority, or child populations within the project area. Therefore, none of the alternatives would have a disproportionate effect on these populations. All adverse effects resulting from the project would affect all persons within the project area, regardless of income, race, or age. In addition, none of the alternatives are expected to result in any major changes in the economic environment in or around the project area, result in long-term health or safety impacts.

# 2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This section describes and compares the alternatives considered for the RCW habitat restoration project. Four alternatives are examined in detail in this EA, and are described in Sections 2.1 through 2.4. In addition, one alternative was considered, but eliminated from further study. This alternative is described in Section 2.5, which also provides the rationale for its elimination. Section 2.6 lists mitigation measures, which would be implemented as part of the action to be taken. Section 2.7 presents the alternatives considered in comparative form, defining the differences in impacts resulting from each alternative.

**Note on Reported Acreages –** For the purposes of this assessment, all acreages for specific treatments, landscape analyses, etc. are calculated using GIS (Geographic Information System) based data sources. GIS based calculations of acreage and distances are made from an aerial perspective, and do not take into account topographic effects on area and length measurements. As a result, reported acreages in this document are considered to be approximate, and may vary slightly from acreages determined by ground-based methods.

## 2.1 ALTERNATIVE 1: NO ACTION (CURRENT MANAGEMENT)

Consideration of the No Action alternative is required by NEPA and CEQ regulations for implementing NEPA. Under Alternative 1, no vegetative thinning would occur within the project area, and current management of Compartments 113, 114, 117, 118, and 119 would continue. Current management includes periodic prescribed burning, some level of noxious weed control, and other activities permitted in the Forest Plan. There would continue to be some efforts made for the protection and enhancement of the RCW, including monitoring, placement of inserts, and removal of predators and nest cavity competitors; however, no direct efforts to improve the quality and quantity of RCW foraging and nesting habitat would be made. This alternative would not meet the requirements of the ESA. In addition, other resource-related activities, including gully restoration and aggressive noxious weed treatment, would not occur under this alternative. The No Action alternative serves as a basis for comparison of the environmental impacts of the Proposed Action and its alternatives, and is a viable alternative.

## 2.2 ALTERNATIVE 2: RCW HABITAT RESTORATION (PROPOSED ACTION)

This alternative primarily consists of using vegetation manipulation by thinning and midstory control (via mechanical methods, herbicide use, and prescribed fire) to help restore habitat for the RCW within Compartments 113, 114, 117, 118, and 119. Specific activities that would occur

under Alternative 2 are listed and described below. Maps of project activities, by compartment, under Alternative 2 are provided in Appendix H of this EA.

- Thin approximately 3,969 acres in Compartments 113, 114, 117, 118, 119 to reduce stands to a 50 to 70 square-foot basal area (BA), with a target of 60 BA. Of the total acres to be thinned, the majority (2,383 acres) is mature pine saw timber, with smaller portions of immature pine saw timber (457 acres) and pine pole timber (1,129 acres). **Table 2.2-1** shows a breakdown of the approximate number of acres proposed for thinning in each compartment. All vegetation management activities would be implemented in accordance with *Georgia's Best Management Practices for Forestry* (GDNR et al., 1999).

**Table 2.2-1. Acres Proposed for Thinning By Compartment under Alternative 2**

| Comp. | Stands | Total Comp. Acres* | No. Acres to be Thinned* | No. Acres For Each Stand Type* | | |
|---|---|---|---|---|---|---|
| | | | | Mature Pine Sawtimber | Immature Pine Sawtimber | Pine Pole Timber/ Precommercial |
| 113 | 1-5, 7, 9, 11-13, 15, 16, 21, 23, 24, 26, 27, 29, 30 | 1,283 | 986 | 613 | 161 | 212 |
| 114 | 1, 3, 7, 10-12, 17-23, 25-28, 31, 32, 58, 59 | 1,809 | 745 | 441 | 73 | 231 |
| 117 | 1, 3-6, 8-10, 12, 14, 15, 17-22, 26-29, 32, 33, 35-38, 63-65 | 1,505 | 953 | 702 | 65 | 186 |
| 118 | 1, 2, 4, 6-11, 13, 14, 16-20, 23, 25, 28, 53, 54 | 1,158 | 501 | 306 | 61 | 134 |
| 119 | 1-3, 6-9, 11-18, 22, 24-27, 30, 31, 58 | 1,328 | 784 | 321 | 97 | 366 |
| **TOTAL** | | 7,083 | 3,969 | 2,383 | 457 | 1,129 |

*Includes National Forest System lands only.

- Conduct prescribed burning of the entire project area (7,083 acres) over the next several years, including growing season burns within recruitment stands to control midstory vegetation. [Note: These burns are already scheduled, have been covered under a separate decision document, and are beginning to occur in the area. Therefore, prescribed burning within the project area is not part of the Proposed Action, but would work in conjunction with the Proposed Action to improve RCW habitat.]
- Develop ten 10- to 20-acre RCW recruitment sites approximately ½-mile apart (USFWS guidelines) on Compartment 113 (stands 1, 5, 9, 11, 13, 15, 16, 24, 29, 30); rehabilitate old recruitment sites on Compartments 114 (stands 1, 19-22, 31, 32, 58, 59), 117 (stands 3, 5, 6, 8-10, 12, 15, 18, 19, 22, 27, 32-34, 36, 37), 118 (stands 1, 2, 8, 10, 11, 13, 14, 16-19, 23, 25, 28, 32), and 119 (stands 1, 2, 6, 8, 14, 25).
- Create 40 RCW artificial cavities/inserts (at least 4 cavities available for each RCW recruitment site) after thinning and prescribed burning, including boundary signage and tree marking.

- Use a combination of herbicides and mechanical methods to control unwanted vegetation on approximately 2,417 acres within RCW foraging and nesting areas (see **Table 2.2-2**). All hardwoods within the areas are not considered as unwanted vegetation. Hardwoods would remain within riparian areas and on sites where determined to be the best species left in place. Fruit-bearing species would not be targeted for removal and hard mast bearing species (oaks and hickories) would be favored over other hardwood species. Unwanted vegetation also includes invasive species such as privet, kudzu, and wisteria. Treatments (herbicides, mechanical, prescribed fire) needed to control unwanted vegetation would be determined upon post-thinning evaluations. Herbicides would be applied manually (foliar spray or injection); no aerial application of herbicides would occur. When implemented, foliar spray applications would be applied to unwanted vegetation less than 7 feet in height. Felling with stump treatment applications or injection applications would be used to treat unwanted vegetation over 7 feet in height. Areas with older and/or dense growth of unwanted vegetation may have selective treatments with herbicides prior to prescribed fire applications to better manage the desired control. Some of these areas may also have post prescribed fire selective treatments with herbicides. Areas where prescribed fire controls most of the unwanted vegetation would only have selective spot treatments with herbicides. Some areas may have unwanted vegetation controlled by prescribed fire and the use of herbicides may not be necessary. Herbicide applications will be done with low pressure backpack sprayers and/or cut surface treatments (stump treatment or injection). Once post-thinning herbicide treatments are implemented, periodic prescribed fire is planned for all of the areas to maintain the control of the unwanted vegetation and reduction of ground fuels. Some areas may require periodic selective spot applications with herbicides along with periodic prescribed fire for control of unwanted vegetation. Refer to Section 1.6.2 and Appendix F for more information on herbicides. Noxious weed control would continue annually until the eradication of the targeted species is obtained (USFS, 2002a). During mechanical treatments, hand-controlled devices (such as chain saws) primarily would be used, with some exceptions where a machine could be used to grind the midstory. The areas planned to have post-thinning evaluation for vegetation control needs are listed in **Table 2.2-2**.

**Table 2.2-2. Stands with the Potential for Herbicide Use under Alternative 2**

| Compartment | Stands | Approx. Acres | RCW Habitat Type |
|---|---|---|---|
| 113 | 1 | 25 | Nesting |
| | 4 | 17 | Foraging |
| | 5 | 19 | Nesting |
| | 9 | 93 | Nesting |
| | 11 | 38 | Nesting |
| | 12 | 63 | Foraging |
| | 13 | 62 | Nesting |
| | 15 | 52 | Nest/Foraging |
| | 16 | 60 | Nest/Foraging |
| | 23 | 49 | Foraging |
| | 24 | 46 | Nesting |
| | 26 | 70 | Nest/Foraging |
| | 27 | 26 | Foraging |
| | 29 | 16 | Nesting |
| | 30 | 12 | Nesting |

| | | | |
|---|---|---|---|
| C-114 | 1 | 112 | Nest/Foraging |
| | 17 | 88 | Foraging |
| | 18 | 30 | Nesting |
| | 19 | 19 | Nesting |
| | 20 | 52 | Nest/Foraging |
| | 21 | 38 | Nesting |
| | 22 | 32 | Nesting |
| | 28 | 19 | Nesting |
| | 31 | 25 | Nesting |
| | 32 | 25 | Nesting |
| | 58 | 10 | Nesting |
| | 59 | 10 | Nesting |
| C-117 | 3 | 61 | Nest/Foraging |
| | 5 | 40 | Nesting |
| | 6 | 50 | Nest/Foraging |
| | 8 | 28 | Nesting |
| | 9 | 21 | Nesting |
| | 10 | 119 | Nest/Foraging |
| | 15 | 30 | Nesting |
| | 17 | 39 | Nesting |
| | 18 | 21 | Nesting |
| | 19 | 14 | Nesting |
| | 22 | 14 | Nesting |
| | 26 | 28 | Nesting |
| | 27 | 26 | Nesting |
| | 28 | 23 | Nesting |
| | 29 | 25 | Nesting |
| | 32 | 34 | Nesting |
| | 33 | 50 | Nest/Foraging |
| | 35 | 18 | Nesting |
| | 36 | 25 | Nesting |
| | 63 | 10 | Nesting |
| | 64 | 10 | Nesting |
| | 65 | 10 | Nesting |
| C118 | 1 | 15 | Nesting |
| | 2 | 39 | Nesting |
| | 8 | 35 | Nesting |
| | 10 | 10 | Nesting |
| | 11 | 13 | Nesting |
| | 13 | 28 | Nesting |
| | 14 | 33 | Nesting |
| | 17 | 30 | Nesting |
| | 18 | 15 | Nesting |
| | 19 | 35 | Nesting |
| | 23 | 40 | Nesting |
| | 25 | 18 | Nesting |
| | 28 | 21 | Nesting |
| | 53 | 10 | Nesting |

| | | | |
|---|---|---|---|
| | 54 | 10 | Nesting |
| C-119 | 2 | 14 | Nesting |
| | 6 | 30 | Foraging |
| | 8 | 81 | Nesting |
| | 14 | 34 | Nesting |
| | 25 | 10 | Nesting |
| | 26 | 13 | Foraging |
| | 27 | 57 | Nesting |
| | 30 | 12 | Nesting |
| | 58 | 10 | Nesting |
| **Total** | | 2,417 | |

- Use and maintain the existing permanent road system. Annual maintenance, including blading, graveling/surface replacement, and mowing, and some pre-haul maintenance, including reshaping and ditch work for proper drainage, would occur on existing permanent roads in the project area prior to initiation of RCW habitat restoration activities (USFS, 2002a; 2003d).
- Construct approximately 1 mile of temporary road on Compartments 113 and 119;
- Reopen and rehabilitate approximately 25.2 miles of temporary roads and associated log landings within the project area to access timber stands. These roads were last used the last time timber was removed from the area (approximately 10 years ago), and reopening them would only involve minor disturbance. Understory vegetation would be cleared from the surfaces of these temporary roads, and gravel would be spread in dips, on slopes exceeding 10 percent, and at intersections with surfaced roads. **Table 2.2-3** presents a breakdown of the number of miles of existing and new temporary roads to be used in each compartment. In addition, this table presents the number and acreage of landings to be used in each compartment under Alternative 2.

**Table 2.2-3. Landings and Roads By Compartment under Alternative 2**

| Comp. | No. of Landings (Approx. Total Acres) | Existing Temp. Roads (Reopened) (Miles) | Miles of New Temp. Road Construction |
|---|---|---|---|
| 113 | 30 (7 acres) | 4.6 | (<) 0.5 |
| 114 | 22 (5 acres) | 1.8 | 0 |
| 117 | 48 (10 acres) | 8.0 | 0 |
| 118 | 27 (5.5 acres) | 4.5 | 0 |
| 119 | 39 (8 acres) | 6.3 | (<) 0.5 |
| Total | 166 (35.5 acres) | 25.2 | 1.0 |

- Provide nesting structures for squirrels within the recruitment stands: 2 structures within each new RCW recruitment area (20 structures total). These structures would be placed on posts within RCW recruitment stands.
- Restore 2 acres of gully on Compartment 113 stand 9 to improve watershed conditions. This would require the movement of soil to fill in the gully and remove surrounding vegetation. Two dozers and a farm tractor would be used to conduct mechanical preparation in the area. Terraces would be constructed to divert the water. After filling, the area would be reseeded and mulched, and would serve as a temporary wildlife opening. The area would be

monitored over the long-term to determine whether these actions are successful (USFS, 2002a).

- Reforest approximately 25 acres of old SPB stands scattered throughout the project area with pine seedlings;
- Develop wildlife viewing areas, which would only include a bench and signage, at two sites: one on Compartment 114 stand 58 and one on Compartment 113 stand 1.

Upon completion of the proposed vegetation management activities, all of the temporary roads would be closed except for administrative use; permanent roads would continue to be maintained as permanent roads. The majority of these temporary roads would be seeded with wildlife mixtures and native grasses and allowed to revegetate. However, some would be permanently maintained as wildlife openings. In addition, roads that access a RCW insert or natural RCW tree would be seeded and maintained.

## 2.3 ALTERNATIVE 3: RCW HABITAT RESTORATION WITHOUT HERBICIDE USE

This alternative primarily consists of using vegetation manipulation by thinning and midstory control (via mechanical methods and prescribed fire only) to help restore habitat for the RCW within Compartments 113, 114, 117, 118, and 119. Specific activities that would occur under Alternative 3 would be the same as those listed under Alternative 2 above, with the exception that no herbicides would be used to control midstory vegetation or noxious weeds within project area. Instead, hand-controlled devices (such as chain saws) would primarily be used, with some exceptions where a machine could be used to grind the midstory. Prescribed fire would be implemented along with this method, and would be conducted every three to five years, as needed, to eliminate midstory within RCW nesting and foraging areas. Maps of project activities, by compartment, under Alternative 3 are provided in Appendix H of this EA.

## 2.4 ALTERNATIVE 4: RCW HABITAT RESTORATION ON A SMALLER LAND AREA

This alternative would involve the same activities as described under Alternative 2 (in Section 2.2 above), but would involve a smaller land area. Under Alternative 4, the following areas would not undergo any of the proposed treatments (with the exception of prescribed fire, which would occur regardless of which alternative is selected):

| Compartment | Stands Not Treated |
|---|---|
| 113 | 5 |
| 114 | 18 |
| 117 | 4, 5, 6, 21, 22, 35 |
| 118 | 10, 11, 16 |
| 119 | 2, 11, 12, 16-18, 26, 30, 31, 58 |

These stands were selected to be omitted from potential vegetation management activities under this alternative to: 1) minimize the potential for resource damage from creating or reopening roads and from vegetation management activities, and 2) minimize the amount of private lands that would have to be crossed to access the project areas. Under the new *Land and Resource Management Plan for the Chattahoochee-Oconee National Forests* (signed January 2004), it is a goal of the USFS to focus on watershed improvements, with water quality being a priority. Alternative 4 was created to respond to this goal, while simultaneously meeting the purpose and need for the project. **Table 2.4-1** shows a breakdown of the approximate number of acres proposed for thinning in each compartment under Alternative 4. Maps of project activities, by compartment, under Alternative 4 are provided in Appendix H of this EA.

**Table 2.4-1. Acres Proposed for Thinning By Compartment under Alternative 4**

| Comp. | Stands | Total Comp. Acres* | No. Acres to be Thinned* | No. Acres For Each Stand Type* | | |
|---|---|---|---|---|---|---|
| | | | | Mature Pine Sawtimber | Immature Pine Sawtimber | Pine Pole Timber/ Precommercial |
| 113 | 1-4, 7, 9, 11-13, 15, 16, 21, 23, 24, 26, 27, 29, 30 | 1,283 | 967 | 594 | 161 | 212 |
| 114 | 1, 3, 7, 10-12, 17, 19-23, 25-28, 31, 32, 58, 59 | 1,809 | 715 | 411 | 73 | 231 |
| 117 | 1, 3, 8-10, 12, 14, 15, 17-20, 26-29, 32, 33, 36-38, 63-65 | 1,505 | 739 | 580 | 65 | 94 |
| 118 | 1, 2, 4, 6-9, 13, 14, 17-20, 23, 25, 28, 53, 54 | 1,158 | 463 | 268 | 61 | 134 |
| 119 | 1, 3, 6-9, 13-15, 22, 24, 25, 27 | 1,328 | 615 | 272 | 97 | 246 |
| | **TOTAL** | 7,083 | 3,499 | 2,125 | 457 | 917 |

*Includes National Forest System lands only.

Since fewer stands are proposed for thinning under Alternative 4, the number of log landings constructed and miles of temporary road reopened would be smaller under this alternative. **Table 2.4-2** presents a breakdown of the number of miles of existing and new temporary roads to be used and the number and approximate acreage of landings to be used in each compartment under Alternative 4.

**Table 2.4-2. Landings and Roads By Compartment under Alternative 4**

| Comp. | No. of Landings (Approx. Total Acres) | Existing Temp. Roads (Reopened) (Miles) | Miles of New Temp. Road Construction |
|---|---|---|---|
| 113 | 27 (5.5 acres) | 3.9 | (<) 0.5 |
| 114 | 21 (5 acres) | 1.2 | 0 |
| 117 | 37 (8 acres) | 5.3 | 0 |
| 118 | 23 (5 acres) | 3.2 | 0 |
| 119 | 29 (6.5 acres) | 3.5 | (<) 0.5 |
| Total | 137 (30 acres) | 17.0 | 1.0 |

The areas planned to have post-thinning evaluation for vegetation and midstory control needs under Alternative 4 (herbicide use and mechanical methods) are listed in **Table 2.4-3**.

**Table 2.4-3. Stands with the Potential for Herbicide Use under Alternative 4**

| Compartment | Stands | Approx. Acres | RCW Habitat Type |
|---|---|---|---|
| 113 | 1 | 25 | Nesting |
| | 4 | 17 | Foraging |
| | 9 | 93 | Nesting |
| | 11 | 38 | Nesting |
| | 12 | 63 | Foraging |
| | 13 | 62 | Nesting |
| | 15 | 52 | Nest/Foraging |
| | 16 | 60 | Nest/Foraging |
| | 23 | 49 | Foraging |
| | 24 | 46 | Nesting |
| | 26 | 70 | Nest/Foraging |
| | 27 | 26 | Foraging |
| | 29 | 16 | Nesting |
| | 30 | 12 | Nesting |
| C-114 | 1 | 112 | Nest/Foraging |
| | 17 | 88 | Foraging |
| | 19 | 19 | Nesting |
| | 20 | 52 | Nest/Foraging |
| | 21 | 38 | Nesting |
| | 22 | 32 | Nesting |
| | 28 | 19 | Nesting |
| | 31 | 25 | Nesting |
| | 32 | 25 | Nesting |
| | 58 | 10 | Nesting |
| | 59 | 10 | Nesting |
| C-117 | 3 | 61 | Nest/Foraging |
| | 8 | 28 | Nesting |
| | 9 | 21 | Nesting |
| | 10 | 119 | Nest/Foraging |
| | 15 | 30 | Nesting |
| | 17 | 39 | Nesting |
| | 18 | 21 | Nesting |
| | 19 | 14 | Nesting |
| | 26 | 28 | Nesting |
| | 27 | 26 | Nesting |
| | 28 | 23 | Nesting |
| | 29 | 25 | Nesting |
| | 32 | 34 | Nesting |
| | 33 | 50 | Nest/Foraging |
| | 36 | 25 | Nesting |
| | 63 | 10 | Nesting |
| | 64 | 10 | Nesting |

| | | | |
|---|---|---|---|
| | 65 | 10 | Nesting |
| C118 | 1 | 15 | Nesting |
| | 2 | 39 | Nesting |
| | 8 | 35 | Nesting |
| | 13 | 28 | Nesting |
| | 14 | 33 | Nesting |
| | 17 | 30 | Nesting |
| | 18 | 15 | Nesting |
| | 19 | 35 | Nesting |
| | 23 | 40 | Nesting |
| | 25 | 18 | Nesting |
| | 28 | 21 | Nesting |
| | 53 | 10 | Nesting |
| | 54 | 10 | Nesting |
| C-119 | 6 | 30 | Foraging |
| | 8 | 81 | Nesting |
| | 14 | 34 | Nesting |
| | 25 | 10 | Nesting |
| | 27 | 57 | Nesting |
| **Total** | | 2,174 | |

# 2.5 ALTERNATIVES ELIMINATED FROM FURTHER STUDY

CEQ regulations for implementing NEPA require that Federal agencies explore and objectively evaluate all reasonable alternatives to the Proposed Action, and to briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This section describes alternatives to the Proposed Action that were considered and eliminated from further study. The rationale for elimination is also given.

## Improve Nesting Opportunities without Vegetation Management

An alternative of improving RCW nesting opportunities by drilling nest holes and placing inserts in the project area, but not conducting vegetation management activities (i.e., thinning), was considered. Under this alternative, although nesting opportunities would be increased, the future planned translocation of RCW would not occur. This alternative was dismissed from further consideration because it does not meet the purpose and need (as stated in Section 1.3 of this EA) of establishing overall favorable habitat for the RCW on the Forest and complying with the provisions of the ESA, the EIS and ROD for the *Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region*, the revised *Recovery Plan for the Red-cockaded Woodpecker*, and the direction established in the revised Forest Plan (2004). Without habitat management and restoration, the RCW would not migrate into the project area regardless of whether additional nesting opportunities were provided, and the RCW recovery objectives would not be met on the Oconee National Forest (Piedmont Recovery Unit). Therefore, this alternative was dismissed from further consideration.

# 2.6 MITIGATION MEASURES

During vegetation management activities, standard best management practices (BMPs) and Forest-wide standards and guidelines would be implemented as provided in the revised Forest Plan and *Georgia's Best Management Practices for Forestry*. Implementation of these BMPS would control or reduce potential adverse impacts from soil erosion, surface water runoff, and sedimentation. In addition to these, other measures would minimize or avoid adverse impacts to environmental resources during the proposed activities. **Table 2.6-1** lists these other measures according to the resource area affected. Appendix C also lists standard mitigation measures for prescribed burning and herbicide use that would be implemented under the action alternatives.

**Table 2.6-1. Recommended Mitigation Measures By Resource Area**

| Resource Area | Mitigation Measure |
|---|---|
| Water Quality and Aquatic Species | • The USFS would stipulate that the contractor avoid use of heavy equipment when soils are wet, such as after a storm event. If work on saturated soils is not preventable, the USFS would require the contractor to use low ground pressure equipment, logging mats, or other techniques.<br>• Planning and approval of log landing and skid trail locations would ensure that they are located in stable, well-drained areas, away from gullies. Skidding and decking would be limited to designated and approved routes along ridgetops and gentle side slopes to protect sensitive soils (i.e., wet and micaceous soils).<br>• The USFS would require the contractor to conduct all timber harvest and roadwork activities in accordance with *Georgia's Best Management Practices for Forestry* and Forest Plan standards and guidelines.<br>• Compacted soils on skid trails, temporary roads, and log landings would be tilled before seeding to increase water infiltration.<br>• Drainage structures at existing stream crossings would be assessed to determine if maintenance, repair, or replacement is required to accommodate stream discharge and fish passage, and to protect water resources.<br>• If wetlands within the project area are field-verified, thinning operations within the wetland boundaries would be minimized and performed to ensure that the function of the wetland is preserved.<br>• The USFS would ensure that all erosion-producing activities conducted within Compartment 114 are in compliance with the GDNR's established TMDL for Gladesville Creek. |
| Vegetation and Wildlife, Including PETS Species | • Log landing and skid trail locations would be reviewed and approved by the USFS prior to harvest to ensure they are appropriately planned to minimize soil impacts and damage to residual trees.<br>• Compacted soils on skid trails, temporary roads, and log landings would be tilled before seeding to enhance revegetation.<br>• Certain log landings used for the project would be left open and maintained as wildlife openings over the long-term. These would include landings in:<br>  ○ Compartment 113, Stands 9, 13, 15, 26;<br>  ○ Compartment 114, Stands 1, 10, 22;<br>  ○ Compartment 117, Stands 4, 5, 10, 14, 20, 21;<br>  ○ Compartment 118, Stands 6, 14, 17, 20, 22; |

| | |
|---|---|
| | ○ Compartment 119, Stands 3, 7, 12, 14, 30.<br>• Fruit trees would be planted within selected wildlife openings, including:<br>○ Compartment 113, Stand 13<br>○ Compartment 114, Stand 1<br>○ Compartment 117, Stand 10<br>○ Compartment 118, Stand 14<br>○ Compartment 119, Stand 30 |

# 2.7 COMPARISON OF ALTERNATIVES

**Table 2.7-1** compares the potential environmental impacts resulting from the Proposed Action and its alternatives. Potential impacts are grouped according to key issue. Section 3.0 of this EA contains a detailed discussion of these potential impacts by key issue.

**Table 2.7-1. Comparison of Potential Impacts of the Alternatives by Key Issue**

| Key Issue | Measurements | Alternative 1: No Action (Current Management) | Alternative 2: RCW Habitat Restoration (Proposed Action) | Alternative 3: RCW Habitat Restoration Without Herbicide Use | Alternative 4: RCW Habitat Restoration on Smaller Land Area |
|---|---|---|---|---|---|
| **Water Quality** | Number of new road-stream crossings | 0 | 0 | 0 | 0 |
| | Miles of temporary road constructed and reconstructed/ reopened (and miles within riparian corridor) | 0 | 1 mile new construction; ~25.2 miles reopened (0 miles within riparian corridor) | 1 mile new construction; ~25.2 miles reopened (0 miles within riparian corridor) | <1 mile new construction; ~17.0 miles reopened (0 miles within riparian corridor) |
| | Number of log landings developed (and number within riparian corridor) | 0 | 166 log landings (0 within riparian corridor) | 166 log landings (0 within riparian corridor) | 137 log landings (0 within riparian corridor) |
| | Acreage of treatment stands within riparian corridor of perennial and intermittent streams and wetlands | 0 | 86.91 acres within riparian corridor | 86.91 acres within riparian corridor | 66.88 acres within riparian corridor |
| **Vegetation and Wildlife, Including PETS Species** | Changes in available habitat for management indicator species (MIS) and general wildlife in the project area | General:<br>--Continued loss of vegetation diversity and abundance in forest understory (decrease browse).<br>--Long-term increase in mature, continuous canopy forest habitat and wildlife species.<br>--No promotion of early successional habitat.<br><br>MIS:<br>--Beneficial effect on pileated woodpecker and wood thrush and their habitats.<br>--No noticeable effect on Acadian flycatcher, hooded warbler, field sparrow, prairie | General:<br>--Increase in understory plant diversity and abundance (increased browse).<br>--Increase in early successional habitat.<br>--Increase in habitat diversity from a combination of thinning and prescribed burning.<br><br>MIS:<br>--Beneficial effect on prairie warbler, pine warbler, RCW, and white-tailed deer and their habitats.<br>--No noticeable effect on Acadian flycatcher, pileated woodpecker, hooded warbler, | General:<br>--Increase in understory plant diversity and abundance (increased browse); greater increase then Alternative 2 over the short-term.<br>--Increase in early successional habitat.<br>--Increase in habitat diversity from a combination of thinning and prescribed burning.<br><br>MIS:<br>--Beneficial effect on prairie warbler, pine warbler, RCW, and white-tailed deer and their habitats.<br>--No noticeable effect on | General:<br>--Increase in understory plant diversity and abundance (increased browse), but on a smaller land area than under Alternatives 2 and 3.<br>--Increase in early successional habitat, but less than Alternatives 2 and 3.<br>--Increase in habitat diversity from a combination of thinning and prescribed burning.<br><br>MIS:<br>--Beneficial effect on prairie warbler, pine warbler, RCW, and white-tailed deer and their habitats. |

| | | | | | |
|---|---|---|---|---|---|
| | | warbler, scarlet tanager, Swainson's warbler, and white-tailed deer or their habitats.<br>--Adverse effect on pine warbler and RCW and their habitats. | field sparrow, scarlet tanager, and Swainson's warbler or their habitats.<br>--Adverse effect (minor) on wood thrush habitat. | Acadian flycatcher, pileated woodpecker, hooded warbler, field sparrow, scarlet tanager, and Swainson's warbler or their habitats.<br>--Adverse effect (minor) on wood thrush habitat. | --No noticeable effect on Acadian flycatcher, pileated woodpecker, hooded warbler, field sparrow, scarlet tanager, and Swainson's warbler or their habitats.<br>--Adverse effect (minor) on wood thrush habitat. |
| | Changes in forest health (changes in general forest conditions, SPB incidences, and noxious weeds) | --Tree growth and forest health would decline over time, and would stabilize at a lower level.<br>--Increased potential for SPB attacks.<br>--Noxious weeds would continue to take over portions of the project area, and would likely spread to adjacent areas. | --Tree growth and forest health would improve.<br>--Decreased potential for SPB outbreaks to occur.<br>--Decrease in spread of noxious weeds, benefiting natural vegetation. | --Tree growth and forest health would improve.<br>--Decreased potential for SPB outbreaks to occur.<br>--Decrease in spread of noxious weeds; however, mechanical treatments would be less effective at controlling noxious weeds, requiring several repeated treatments in order to eliminate these species. | --Tree growth and forest health would improve, but on a smaller land area than under Alternatives 2 and 3.<br>--Decreased potential for SPB outbreaks to occur.<br>--Decrease in spread of noxious weeds, benefiting natural vegetation, but on a smaller land area than under Alternatives 2 and 3. |
| | Effects on the RCW and available habitat for the species | --No promotion or creation of RCW habitat.<br>--Alternative would not work toward recovery plan objectives or be in compliance with the Endangered Species Act. | --Long-term, beneficial impact on RCW populations and habitat.<br>--About 3,500 acres of habitat would be improved for the RCW.<br>--Alternative is in compliance with recovery plan objectives and with the ESA. | --Long-term, beneficial impact on RCW populations and habitat.<br>--About 3,500 acres of habitat would be improved for the RCW.<br>--Alternative is in compliance with recovery plan objectives and with the ESA. | --Long-term, beneficial impact on RCW populations and habitat.<br>--About 3,000 acres of habitat would be improved for the RCW.<br>--Alternative is in compliance with recovery plan objectives and with the ESA. |
| | Effects on other PETS | No effects on any other PETS species. | No effects on any other PETS species. | No effects on any other PETS species. | No effects on any other PETS species. |

# 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section has been organized according to environmental components, or resource areas. Each resource section contains information on the affected environment (existing conditions), direct and indirect environmental consequences of each alternative, and cumulative impacts.

## METHODOLOGY

The interdisciplinary study team (see Section 6.0, List of Preparers) first identified the specific activities, tasks, and subtasks involved in the Proposed Action and its alternatives. The full range of direct and indirect effects that could potentially occur as a result of the Proposed Action and its alternatives were then identified and analyzed. Direct effects are impacts caused by the alternative(s) at the same time and in the same location as the action. Indirect effects are impacts caused by the alternative(s) that occur later in time or farther in distance than the action.

### Cumulative Impacts

A cumulative impact is an impact on the natural or human environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency, organization, or person undertakes such other actions. Cumulative impacts can result from individually minor and insignificant, but collectively significant actions, taking place over a period of time. Cumulative impacts were assessed by combining the potential environmental impacts of the alternatives with the potential impacts of known projects that have occurred in the past, are currently occurring, or are projected to occur in the future within the region of the Proposed Action. Known past, current, and reasonably foreseeable future projects in the vicinity of the project area are described below.

Historically, the land area managed by the USFS on the Oconee National Forest was primarily deciduous hardwood forest. Much of the land was subjected to severe erosion during the 1800s and early 1900s due to a lack of conservation practices during intensive agricultural use. This land was extensively cleared and farmed, and underwent cycles of land abandonment and re-clearing. As a result, millions of tons of soil were washed into the streams in the area, destroying water-related species. When the Federal government obtained the land in the 1930s, conservation practices, such as tree planting (pines), gully removal, soil restorations, gabion installation, and reintroduction of aquatic species, were implemented on the land. These conservation practices continue to occur, reducing additional sediment loads into streams. Currently, 72 percent of the Oconee National Forest is primarily covered in loblolly pine with some mixed hardwood (USFS, 2001; 2003c).

Forest cover and forest health on the Oconee National Forest have been and remain high concerns due to tree declines, non-native diseases, insect pests, and non-native plants. The SPB, a native insect, has been a recurrent challenge on an approximate 3- to 5-year cycle on the

Forest. The most recent epidemic began in 1999 and continues today. This epidemic has resulted in severe pine tree mortality, and is threatening the RCW Sub-HMA (the proposed project area). In response to this epidemic, the USFS implemented cut-and-leave and salvage treatment programs on the Oconee National Forest (USFS, 2001). Cut-and-leave suppression was conducted on various SPB spots during 2000. Most spots were less than 1 acre to a few acres in size. Many of those spots are located near these RCW cluster sites, and threatening cluster sites near the Piedmont National Wildlife Refuge. The intensity of the SPB is currently becoming evident in these areas. An outbreak of some degree could occur within the damage spots that were not treated in 2003. The majority of infested trees were pole-sized pine forest (diameters between 9 and 12 inches) under 40 years of age, which has not had a first thinning, but still provide foraging habitat. However, some trees (diameters greater than 12 inches) over 60 years old (which are suitable foraging and potential nest trees for RCW) have also been infested with SPB. These SPB infested areas are within or near cluster sites that are active, inactive, or may provide future recruitment sites (Caldwell, 2004).

Since 1991, the USFS has invested substantial time, money, and resources to aid in the recovery of the RCW within the Habitat and Sub-HMA on the Oconee National Forest. In fiscal year 2003, the Oconee Ranger District issued a Decision Memo regarding the use of prescribed burning within the HMAs and Sub-HMAs and Greene County to improve RCW habitat and other wildlife habitat. This decision involves burning approximately 18,300 acres over the next 2 years in these areas (USFS, 2003a).

# 3.1 PHYSICAL ENVIRONMENT

## 3.1.1 Water Quality

*Element:* The Proposed Action and its alternatives may adversely affect water quality and aquatic species and habitats through increases in erosion, sedimentation, and nutrients to streams, as well as changes in riparian habitats.

*Measurements:*

- Number of new road-stream crossings
- Miles of temporary road constructed and reconstructed (and miles within riparian corridor)
- Number of log landings developed (and number within riparian corridor)
- Acreage of treatment stands within riparian corridor of perennial and intermittent streams and wetlands

*Bounds for Analysis:*

- Spatial: The area potentially affected by the proposed activities includes project area streams, riparian areas, and wetlands. Stream effects could occur from locations within the project area to a short distance downstream of the project area.
- Temporal: Temporary effects include those effects lasting only during the actual treatments/activities. Short-term effects include those effects lasting up to a few years

following cessation of activities. Long-term effects would be those effects that would last more than a few years, or those that would be permanent.

### *3.1.1.1 Affected Environment*

Much of the land area managed by the USFS on the Oconee National Forest was subjected to severe erosion during the 1800s and early 1900s due to a lack of conservation practices during intensive agricultural use. This land was extensively cleared and farmed, and underwent cycles of land abandonment and re-clearing. As a result, millions of tons of soil were washed into the streams in the area, adversely impacting water resources. The Federal government obtained the land in the 1930s. Conservation practices, such as *Georgia's Best Management Practices (BMPs) for Forestry*, were eventually implemented on the land. These conservation practices continue to occur, reducing additional sediment loads into streams (USFS, 2001).

There are no trout streams in the project area (GDNR et al., 1999). All surface waters within the project area drain into the Ocmulgee River. The proposed project area lies within two watershed management areas (WMAs). The majority of the project area (Compartments 113, 114, 118, and 119) is in the Ocmulgee River-Rum Creek WMA. This WMA covers 16,877 acres, approximately 12 percent of which are USFS lands. The majority of this WMA (approximately 71 percent) is in forested land use; small portions are in urban (4 percent) and agricultural (2 percent) land uses. The Piedmont National Wildlife Refuge is also located within this WMA (USFS, 2004b). Several streams in this WMA run through the project area, including Gladesville Creek, Little Gladesville Creek, Stalking Head Creek, Falling Creek, and Little Falling Creek. Of these streams, only Gladesville Creek (from its headwaters to Little Falling Creek), which runs through Compartment 114 within the project area primarily on private lands, is listed as an impaired water on the Georgia Department of Natural Resources (GDNR), Environmental Protection Division's Section 305(d) and 303(d) lists as a result of sediment volume. Waters are listed as impaired when they do not support, or only partially support, their designated uses. This segment of Gladesville Creek currently only partially supports fishing use, and as such, the GDNR has prepared a Total Maximum Daily Load (TMDL) for the stream to identify the pollution source and the pollutant reductions needed to attain and maintain water quality standards (GDNR, 2001; 2004). According to the TMDL, a maximum of 3,425 tons of sediment per year are allowed to enter Gladesville Creek (GDNR, 2001).

A small portion of the project area (Compartment 117) falls within the Ocmulgee River-Big Sandy Creek WMA. This WMA covers 14,613 acres, approximately 12 percent of which are USFS lands. The majority of this WMA (approximately 58 percent) is in forested land use; small portions are in urban (2 percent) and agricultural (9 percent) land uses (USFS, 2004b). The only stream in this WMA that runs through the project area is White Creek and its tributaries. This stream is not listed as an impaired water on either the GDNR Section 305(d) list nor the 303(b) list (GDNR, 2004; USFS, 2004b). The Ocmulgee River runs along the western boundary of Compartment 117, on private lands.

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. Healthy streams can handle some silt without negatively affecting fish or invertebrates. In general, the streams within the project area are healthy (USFS, 2001).

## Wetlands

Wetlands were identified using the USFWS's National Wetland Inventory (NWI). There are three extensive wetland areas within the project area, all of which are associated with streams. The NWI classifies wetlands according to the Cowardin system (Cowardin et al., 1979). The wetland classifications occurring within the project area are:

- *Palustrine emergent* – characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. Usually dominated by perennial plants.
- *Palustrine forested* – characterized by woody vegetation that is at least 20 feet tall.
- *Palustrine scrub-shrub* – includes areas dominated by woody vegetation less than 20 feet tall.
- *Palustrine unconsolidated bottom, permanently flooded* – includes all wetland and deepwater habitats with at least 25 percent cover of particles smaller than stones, a vegetative cover less than 30 percent, and that are flooded throughout the year (Cowardin et al., 1979).

One extensive wetland is located in Compartment 114 and is associated with Gladesville Creek and its floodplain. One-quarter of this wetland is located adjacent to, but not within, a stand proposed for thinning. The second extensive wetland is located along the western boundary of Compartment 113 and is associated with Little Gladesville Creek and its floodplain. A very small portion of this wetland is located adjacent to a stand proposed for thinning; however, the vast majority of stands around this wetland are not proposed for thinning. The third extensive wetland within the project area is located along the boundary between Compartments 118 and 119 and is associated with Falling Creek. Several areas proposed for thinning within both of these compartments are adjacent to this wetland (USFWS, 2003b).

## Aquatic Species

Aquatic species known from the Oconee National Forest include redbreast sunfish (*Lepomis auritus*), yellow bullhead (*Ameriurus natalis*), snail bullhead (*Ameriurus burnneus*), creek chub (*Semotilus atromaculatus*), silver redhorse (*Moxostoma anisurum*), Christmas darter (*Etheostoma hopkinsi*), coastal shiner (*Notropis petersoni*), eels (*Anguilla rostrata*), and chain pickerel (*Esox niger*). As discussed above, sediment has accumulated in the project area streams from more than 100 years of extensive and destructive farming techniques prior to Federal ownership of the land. The aquatic species that now exist in the project area streams are a direct result of the existing sedimentation inherited at the time of becoming a National Forest. Sedimentation has the potential to limit reproduction of aquatic species and inhibit aquatic insect populations. The Forest Plan for the Chattahoochee-Oconee National Forests includes standards and guidelines, such as Georgia's BMPs for Forestry, designed to reduce or prevent sediment from entering streams and to maintain the hydrologic function of floodplains and wetlands.

*Locally Rare Species*

There are no locally rare aquatic species known from the project area.

*Proposed, Endangered, Threatened, and Sensitive (PETS) Species*

Potentially affected aquatic PETS 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, (3) consultations with other agencies and universities, (4) reviewing data from PETS Risk Assessments for the Oconee National Forest, and (5) general observations. The following 5 aquatic species are within the range of the Oconee National Forest based on a review of the above sources.

| Common Name | Scientific Name | Status |
|---|---|---|
| Altamaha Shiner (fish) | *Cyprinella xaenura* | Sensitive |
| Inflated Floater (mussel) | *Pygandon gibbosa* | Sensitive |
| Ocmulgee Shiner (fish) | *Cyprinella callisema* | Sensitive |
| Robust Redhorse (fish) | *Moxostoma robustum* | Sensitive |
| Bluestripe Shiner (fish) | *Cyprinella callitaenia* | Sensitive |

No listed Oconee National Forest PETS fish or mussel species were found within the project area during recent (1995 and 1998) surveys. A recent fish survey done (June 1998) on the Long Branch tributary, which is north of the project area approximately five miles, revealed that the stream was in fair condition with no listed PETS fish or mussels being found (Caldwell, 2004).

The Ocmulgee shiner and inflated floater are not listed as being present in the project area within Jasper County (see Georgia Rare Species information for Jasper County within project file). The inflated floater, a freshwater mussel, lives in soft mud and sand, and in sand bars generally found in slow-moving water. This species is known to occur within the Ocmulgee and Altamaha River Drainage. It was not detected in Wise Creek during surveys done in 1998. A fish survey conducted in the Long Branch tributary on July 21, 2000, by GDNR biologists also did not detect the inflated floater. Altamaha shiners occur in the upper Altamaha River Drainage. Their preferred habitat is rocky and sandy pools of creeks and small rivers. This species was not detected during fish surveys done in 1995 (Caldwell, 2004).

According to GDNR, the robust redhorse does not occur north of Lake Sinclair dam. Maps of the areas where robust redhorse has been discovered indicate this species is located south of Milledgeville, Georgia. However, reintroduction of the species into the Ocmulgee River was done in 2002. To the knowledge of the USFS and based on surveys, these are the areas where the species has been identified. The project area is south of where the reintroduction occurred (Caldwell, 2004).

### *3.1.1.2 Environmental Consequences*

The vegetation management and associated activities proposed for the project area can potentially have a variety of effects on water resources and aquatic species. These effects are

generally described below by major activity, including vegetation management by thinning and midstory control, road rehabilitation/construction and maintenance (including skid trails and landings), and other associated activities (e.g., gully restoration).

**Alternative 1 (No Action: Current Management)**

Under Alternative 1, none of the proposed vegetation management or other activities would occur. No additional adverse impacts on water resources would be anticipated under this alternative. However, since gully restoration activities would not occur under this alternative, soil erosion and sedimentation at the two-acre site would continue and would worsen over time. In addition, since road maintenance activities would not occur, any drainage problems and subsequent sedimentation would continue, and would worsen with continued used of the roads. However, these impacts would be minor in intensity.

*Aquatic Species*

Under Alternative 1, no additional direct impacts on aquatic species, including PETS species, would occur. However, as discussed above, erosion and sedimentation from the two-acre gully and from deteriorating road conditions would continue to occur, and could worsen over time, adversely impacting aquatic species in the area over the long-term. Effects on aquatic species from sedimentation are discussed in detail under Alternative 2 below. However, these adverse impacts under Alternative 1 would be minor in intensity.

**Alternative 2 (Proposed Action: RCW Habitat Restoration)**

*Thinning and Midstory Control*

The Oconee National Forest proposes to thin 3,489 acres of loblolly pine in Compartments 113, 114, 117, 118, and 119 of the Forest. Thinning activities would include tree removal, use of heavy equipment, construction/use of log landings and skid trails, and road maintenance, reconstruction, and construction. In addition, midstory control would occur on approximately 2,840 acres by a combination of mechanical and chemical treatments. All of these activities cause soil disturbance, exposure, erosion, and compaction, which can degrade water resources by increasing water and pollutant runoff to streams.

Removal of vegetation through thinning, mechanical treatments, and herbicide use can degrade stream water quality by increasing sediment and nutrient runoff input to streams. Removal of vegetation can also affect the quantity of surface water runoff. Vegetation provides erosion control through water infiltration and uptake, reducing runoff to streams, and through soil stabilization. Vegetation removal as a result of thinning activities would reduce normal water infiltration and may accelerate soil and nutrient loss though sheet and rill erosion within the project area over the short-term. Sediment and nutrient delivery to streams may increase after timber harvest operations and is proportional to the area disturbed and maintained free of vegetation (Gucinski et al., 2001). As the density of the forest stand decreases, intercepted rainfall decreases, increasing the amount of surface water runoff from the area (Schultz, 1997). This impact would be greatest in stands with the highest basal areas (BA), due to the greater

amount of trees that need to be removed to achieve the stocking level. Increased surface water runoff can increase stream flow and storm flow, which can lead to stream channel scouring, stream bank erosion, increased sedimentation and nutrients, and flooding (Fulton and West, 2002; USEPA, 2001; Miller, 1987).

Nutrients, including nitrogen and phosphorus, can enter waterbodies attached to sediment, dissolved in water runoff, or through the air (USEPA, 2001). Nutrient losses tend to increase proportionately with sediment losses (Schultz, 1997). Increased nutrient runoff to streams can have either adverse effects (Lemly, 2000) or potentially beneficial effects, depending on the level of nutrient runoff, and the current nutrient content of the streams (Tank and Webster, 1998). Many aquatic systems are nutrient poor, and therefore, small increases in nutrients can improve their productivity (USFS, 1989a).

Of particular concern are treatment areas encroaching on riparian areas and wetlands, where removal of vegetation can have the greatest impact. In accordance with the revised Forest Plan (2004), riparian corridors have been established on the Oconee National Forest, within which management practices are designed to maintain and protect riparian functions and values. Riparian corridor widths for the Oconee National Forest are presented in **Table 3.1-1**.

**Table 3.1-1. Riparian Corridor Widths By Slope Class and Stream Type for the Oconee National Forest**

| Slope Class | Minimum Width (feet) of Corridor on Each Side | |
|---|---|---|
| | Perennial Streams and Wetlands | Intermittent Streams |
| 0 – 30% | 100 | 50 |
| 31 - 45% | 125 | 75 |
| 45%+ | 150 | 100 |

Source: USFS, 2004a

Implementation of forested riparian areas provide a buffer to streams and wetlands, protecting water quality by retaining and filtering pollutants in runoff before the runoff reaches the stream channel or wetland. Within the project area, the majority of the riparian areas and wetlands are forested, and all have slopes between 0 and 30 percent.

Using the above riparian corridor widths, the study team identified the number of stands proposed for thinning under Alternative 2 that are within 100 feet of a perennial stream or wetland or within 50 feet of an intermittent stream. **Table 3.1-2** lists these stands, by compartment, as well as the acreage of each of these stands within the affected riparian corridors.

**Table 3.1-2. Stands Proposed for Thinning within Riparian Corridors under Alternative 2**

| Comp. | Stand # (and Acreage of Each Stand) within a Riparian Corridor | Total Acres in Riparian Corridor by Compartment |
|---|---|---|
| 113 | #03 (1.08 acres); #04 (0.32 acres); #05 (2.23 acres); #08 (3.08 acres); #09 (0.91 acres); #13 (0.01 acres); #24 (1.48 acres); #26 (0.09 acres) | 8.29 acres |
| 114 | #01 (0.99 acres); #10 (0.62 acres); #11 (1.10 acres); #12 (2.70 acres); #22 (0.36 acres); #28 (0.44 acres); #40 (2.49 acres); #88 (1.09 acres) | 9.79 acres |

| | | |
|---|---|---|
| 117 | #03 (2.85 acres); #04 (0.29 acres); #06 (1.53 acres); #10 (2.04 acres); #14 (0.12 acres); #17 (0.22 acres); #19 (0.26 acres); #20 (2.24 acres); #21 (0.26 acres); #28 (4.62 acres); #29 (0.40 acres) | 14.84 acres |
| 118 | #01 (0.003 acres); #04 (2.02 acres); #06 (0.32 acres); #10 (7.69 acres); #11 (0.51 acres); #17 (4.58 acres);#18 (0.31 acres); #28 (9.42 acres) | 24.84 acres |
| 119 | #02 (0.8 acres); #03 (0.33 acres); #07 (8.42 acres); #09 (0.6 acres); #11 (1.55 acres); #12 (1.80 acres); #13 (0.15 acres); #9.92 acres); #24 (2.75 acres); #26 (1.98 acres); #30 (0.50 acres); #58 (1.61 acres) | 29.15 acres |
| **Total Acreage within Riparian Corridors** | | 86.91 acres |

Adverse impacts on water resources from potential increases in water runoff, sediment, and nutrient yields as a result of the proposed vegetation management activities would be minimized through implementation of *Georgia's Best Management Practices (BMPs) for Forestry* (GDNR et al., 1999) and Forest Plan standards and guidelines, which require measures/activity restrictions to be taken to minimize impacts within riparian corridors for the protection of water quality. In accordance with these guidelines, timber harvesting techniques that minimize soil disturbance, such as backing trees out with a machine and using low ground pressure equipment, logging mats, and equipment with booms or cable winches, would be used within riparian corridors. All streambank vegetation would be left uncut, and groundcover within the riparian corridors would be retained. Within the riparian corridor along perennial streams, Georgia BMPs require an average of 50 square feet of BA per acre to be left evenly distributed (or at least 50 percent canopy cover) after a harvest. Within the corridor along intermittent streams, an average of 25 square feet of BA per acre (or at least 25 percent of the canopy cover) must be left evenly distributed. Within 25 feet on either side of ephemeral streams, a minimum of 20 square feet per acre of basal area of canopy or midstory trees are required to be left in place following timber harvest activities. In addition, no handling, mixing, or storing of toxic or hazardous materials (fuels, lubricants, pesticides, fertilizers) is permitted within the riparian corridors (GDNR et al., 1999).

Although some of the proposed thinning and midstory control operations may occur within riparian zones in the project area, any harvesting within these areas would be performed in a manner that ensures the continued function of the riparian zone. Implementation of the above guidelines during timber harvest would reduce increases in surface water runoff entering streams as a result of vegetation removal and soil compaction, thereby reducing impacts on stream flow and channel erosion; avoid or greatly minimize any impacts on water temperature through prohibition of tree removal near streams and other water bodies; reduce channel erosion by increasing stream bank stability; and reduce the amount of nutrients and sediment entering streams, thereby protecting water quality. A very small amount of potential wetland areas (as identified by the NWI) are found within areas proposed for thinning treatments. If these wetlands are field-verified, thinning operations within the wetland boundaries would be minimized and performed to ensure that the function of the wetland is preserved.

In addition to the above measures, the USFS would conduct all erosion-producing activities within Compartment 114 in compliance with the GDNR's established TMDL for Gladesville Creek. According to the TMDL, a maximum of 3,425 tons of sediment per year are allowed to enter Gladesville Creek (GDNR, 2001).

Overall, surface water runoff, erosion, and sedimentation impacts from vegetation removal through thinning and midstory control would be short-term, lasting only until understory vegetation in thinned areas begins to grow. Thinning would allow more sunlight to reach the forest floor, which would encourage and increase the amount and growth rate of understory plants. This understory vegetation would increase rainfall infiltration, reducing surface water runoff and soil erosion in the area, and thus reducing adverse impacts on water quality.

*Road Rehabilitation/Construction and Maintenance (including Log Landings/Skid Trails)*

Some permanent road maintenance and temporary road construction and reconstruction/ reopening would be necessary for conducting the proposed thinning activities under Alternative 2. Less than 1 mile of new temporary roads would be constructed, and approximately 25.2 miles of temporary roads would be reopened under Alternative 2 to conduct the proposed thinning activities. The mileage breakdown for each compartment is provided in **Table 2.2-2** in Chapter 2.2 of this EA. The existing temporary roads to be reopened were last used approximately 10 years ago; reopening the roads would involve removing understory vegetation from the road surface and graveling the surface in areas of dips, greater than 10 percent slopes, and intersections with surfaced roads. Reopening these roads would involve minor to moderate ground disturbance, including compaction from heavy vehicle use, and vegetation removal for a 12- to 15-foot wide clearing. Road erosion is normally greatest during and immediately following the construction phase, after which soil erosion and sedimentation effects decrease exponentially (Grace et al., 1997). In addition to these roads, approximately 166 log landings would be created within the project area.

Road construction, reconstruction, and use can adversely affect water quality through removal of vegetation and litter cover, which act to stabilize soils, decrease surface water runoff and trap sediment and nutrients; compaction, exposure, and disturbance of soils, leading to erosion and sedimentation to streams; and increased chemical contamination as a result of spills. Road construction, reconstruction, and use are reported to be the primary source of erosion and sediment resulting from timber harvest activities (England, 1987; Fulton and West, 2002; Seehorn, 1987; Gucinski et al., 2001; Williams et al., 1999). As much as 90 percent of sediment entering streams resulting from timber harvest can be linked to the roads, log landings, and other components of the transportation system (Seehorn, 1987). Sedimentation impacts from temporary road construction and use for timber harvest activities are typically short-lived, occurring at the highest levels during and for a few years after road construction or reopening. Impacts decrease in intensity as the road surface and cut-fill slopes stabilize, and roads begin to revegetate (Fulton and West, 2002; Gucinski et al., 2001).

Road construction can also affect the hydrology of the area, resulting in changes in water yields and stream morphology. These changes in hydrology affect the amount of time required for rainfall to enter stream channels, thereby altering the timing of peak flows, and can cause

changes in stream channel morphology (Gucinski et al., 2001; Miller, 1987). Skid trails, log landings, and roads can also alter natural drainage patterns and impair water quality by intercepting, diverting, and concentrating surface runoff to streams increasing flow velocities and sediment and nutrient delivery (Gucinski et al., 2001).

The majority of adverse impacts on water resources and water quality resulting from the road system and associated log landings are directly related to the length/size, placement, and conditions of the roads and landings. Road and log landing construction adjacent to stream channels poses the highest risk for adverse impacts. Under Alternative 2, no new road-stream crossings would be constructed, and all temporary roads proposed for construction or reopening/ reconstruction would be located outside of the riparian corridors presented in **Table 3.1-1** above. In addition, all proposed locations for log landings are located outside these riparian coordiors. Effects on water resources from potential increases in water runoff, sediment, and nutrient yields from roadwork under Alternative 2 would be minimized with the use of mitigation measures designed to reduce erosion and sediment. The use of and adherence to *Georgia's BMPs for Forestry* (GDNR et al., 1999) and Forest Plan standards and guidelines would ensure compliance with the Clean Water Act.

For temporary roads and log landings, increased erosion would be primarily limited to the period of use of the roads and landings, as erosion levels would rapidly decline to baseline levels following the closure and reseeding of temporary roads and landings. Upon completion of thinning activities, skid trails, log landings, and temporary roads would be closed by waterbarring and seeded with native grasses to stabilize and rehabilitate exposed soils. Compacted soils on skid trails and log landings would be tilled before seeding to increase water infiltration. Groundcover vegetation should regenerate rapidly from greater light penetration to the forest floor, stabilizing soils and reducing erosion and water runoff. In addition, all retired access roads would be inspected periodically by the USFS to assure that stabilization techniques are effective. Therefore, temporary roads, log landings, and skid trails would not contribute to sedimentation over the long-term.

Of the 166 log landings proposed for development under Alternative 2, 18 would be maintained permanently by the USFS as wildlife openings. These openings would not contribute to sedimentation to streams over the long-term, since native grasses and shrubs would be established and maintained in each opening, providing adequate runoff control over the long-term.

In addition to temporary road construction and reopening, several miles of existing permanent roads within and adjacent to the project area would need to undergo maintenance for the proposed thinning activities. This maintenance work would include blading and graveling, and potentially reshaping and ditch work for proper drainage. While these activities would improve road conditions and drainage structures, thereby reducing potential sediment and water yields, sediment and water yield from these roads during timber harvest activities would still be higher than baseline conditions.

*Other Activities*

A two-acre gully within Compartment 113 is proposed to be restored under Alternative 2. This gully was formed as a result of severe erosion from heavy farming prior to Federal land acquisition. Restoration would require the movement of soil to fill in the gully and remove surrounding vegetation, and subsequent reseeding and mulching of the area. While this action would involve the use of heavy equipment (for soil movement and site preparation), which would have similar adverse impacts on water quality as discussed above for thinning, these impacts would be temporary, as the area would be immediately reseeded and allowed to revegetate. Over the long-term, restoration of this gully would have a minor, localized, beneficial effect on water resources through a small reduction in sediment. The area would be monitored over the long-term to determine whether restoration efforts were successful.

In addition, annual maintenance on permanent roads would be performed under Alternative 2. Annual maintenance would include activities like reshaping and repairing the road surface, graveling, and drainage repairs and/or improvements. All of these activities would have long-term, minor, beneficial impacts on water quality through reducing runoff, soil erosion, and sedimentation.

*Aquatic Species*

Aquatic organisms depend on numerous physical stream characteristics for survival, including temperature, dissolved oxygen, turbidity, light, nutrients, sediment particle size, and flow. Impacts on aquatic species and habitats resulting from vegetation management activities are indirect, and occur as a result of impacts on water quality and quantity, as well as changes in surrounding habitat. The potential for water quality impacts resulting from vegetation management increases with an increase in the severity of site disturbance, as discussed above. Many of these effects can be greatly reduced through the use of BMPs.

*Thinning and Midstory Control*

As discussed above, thinning and midstory control activities have the potential to affect the water quality of streams and indirectly affect aquatic organisms and habitat in those streams within and adjacent to the project area through the clearing of vegetation, soil disturbance, and compaction associated with the use of heavy equipment. Increased surface water runoff from compaction and vegetation removal can increase stream flow and storm flow, which can lead to stream channel scouring, stream bank erosion, increased sedimentation and nutrients, and flooding, all of which can impact aquatic organisms (Fulton and West, 2002; USEPA, 2001; Miller, 1987).

Runoff contains suspended sediments and cation nutrients, and the amount of sediment and nutrients in runoff increases as the amount of overstory in the area decreases (Schultz, 1997). Increased sediment loads could potentially reduce water quality and may adversely affect fish or spawning areas. Sedimentation to streams increases turbidity and suspended solids in the water, which could block sunlight, impair photosynthesis by algae and aquatic plants, reduce oxygen replenishment, and harm fish respiratory systems. Once deposited on stream bottoms, sediment can adversely affect spawning areas, bury or smother eggs and fry, prevent larvae emergence,

and fill in pools that are essential as fish cover (USFS, 1989a; USEPA, 2001; Seehorn, 1987; Gucinski et al., 2001).

Nutrient losses tend to increase proportionately with sediment losses (Schultz, 1997). Increased nutrient runoff to streams can have either adverse effects (Lemly, 2000) or potentially beneficial effects, depending on the level of nutrient runoff, and the current nutrient content of the streams (Tank and Webster, 1998). Many aquatic systems are nutrient poor, and therefore, small increases in nutrients can improve their productivity (USFS, 1989a). Nutrient runoff may adversely affect fish species through the proliferation of algae or other microorganisms (algal blooms) (Lemly, 2000; USEPA, 2001), which can increase biological oxygen demand, and therefore, decrease levels of dissolved oxygen in waterbodies (USEPA, 2001).

However, thinning and midstory control under Alternative 2 would only remove a portion of the trees from the project area; there would still be many trees remaining. Loblolly pine stands are well-suited for promoting site stability and minimizing surface water runoff and soil erosion. Loblolly pines control erosion through shedding needles that resist surface water movement on the forest floor (Schultz, 1997), thereby reducing sediment and nutrient delivery to nearby streams, which might otherwise be harmful to aquatic communities. In addition, in accordance with Forest Plan guidance, streambank trees would not be removed, which reduce or eliminate any potential for changes in water temperature from changes in streambank shading.

Surface water runoff and erosion, and subsequent impacts on aquatic species, from thinning and midstory control would be highest immediately following tree removal. As discussed above, these impacts would be short-term, lasting only until understory vegetation in thinned areas begins to grow, and would be minor with implementation of *Georgia's BMPs for Forestry* and Forest Plan standards and guidelines. Understory vegetation would increase rainfall infiltration, reducing surface water runoff and soil erosion in the area, and thus reducing adverse impacts on water quality and aquatic organisms. No significant adverse impacts on aquatic species or their habitat are expected to result from the proposed thinning and midstory control activities under Alternative 2.

*Road Rehabilitation/Construction and Maintenance (including Log Landings/Skid Trails)*

As discussed above, some road maintenance and temporary road construction and reopening would be necessary for conducting the proposed activities. The vast majority of adverse impacts from roads on aquatic species result from direct effects on their habitat, including changes in water quality, water temperature, and hydrology (Gucinski et al., 2001). Road construction adjacent to stream channels poses the highest risk for adverse impacts on aquatic organisms. However, under Alternative 2, no new temporary roads would be constructed or reopened within the established riparian corridors.

Under Alternative 2, adverse effects on aquatic species and habitats would be minimized through proper planning and subsequent rehabilitation of skid trails, log landings, and roads, and by following Georgia BMPs, as discussed above directly under water quality. Sedimentation impacts from temporary road construction and use for thinning activities would be short-lived, occurring at the highest levels during and for a few years after road construction. Impacts would

decrease in intensity as the road surface and cut-fill slopes stabilize, and roads begin to revegetate (Fulton and West, 2002; Gucinski et al., 2001). In sum, only minor, short-term, adverse effects on aquatic species are expected to occur from temporary road rehabilitation or construction under Alternative 2.

*Other Activities*

Impacts on aquatic species from gully restoration activities would be directly related to impacts on water quality discussed above. Over the short-term, negligible to minor, localized effects on aquatic species and habitat may occur from heavy equipment use. However, long-term impacts on aquatic species would be beneficial, although minor. Restoration of this gully would remove this sediment source from the project area, improving conditions for aquatic species. Likewise, long-term effects on aquatic species and habitats from permanent road maintenance activities under the service contract would be beneficial.

*Proposed, Endangered, Threatened, and Sensitive (PETS) Species*

Implementation of Alternative 2 would not directly impact the robust redhorse due to the location of the project area. The nearest project area location (C-117) is located over one mile east of the Ocmulgee River, but does not have tributaries would eventually flow into the Ocumulgee River. The Proposed Action to implement vegetation management by thinning the project areas will not impact the robust redhorse. Currently, a recovery plan is being developed to help make sure the species is not listed as endangered. The Robust Redhorse Conservation Committee (RRCC) and GDNR Recovery Team meet annually to discuss the locations and progress of the studies of reintroduction and management objectives (Caldwell, 2004).

**Alternative 3 (RCW Habitat Restoration Without Herbicide Use)**

Impacts on water resources and aquatic species under Alternative 3 would be similar to those resulting from Alternative 2. Refer to Alternative 2 above for a discussion of these impacts. The primary difference in impacts under Alternative 3 would be that mechanical treatments used to control all midstory vegetation and noxious weeds within project area stands would be less likely to kill targeted vegetation than a combination of herbicides and mechanical treatments proposed under Alternative 2. The result would be a potentially lesser amount of runoff and subsequent sedimentation from the project area over the short-term under Alternative 3. This difference would be barely detectible.

**Alternative 4 (RCW Habitat Restoration on a Smaller Land Area)**

Impacts on water resources and aquatic species under Alternative 4 would be similar to those resulting from Alternative 2. Refer to Alternative 2 above for a discussion of these impacts. The primary difference is that potential impacts on water resources and aquatic species under Alternative 4 would be less than those under Alternative 2, due to a smaller area proposed for thinning, and a subsequently smaller number of roads that would need to be reopened/ rehabilitated.

The stands removed from consideration for vegetation management under Alternative 4 were selected to: 1) minimize the potential for resource damage from creating or reopening roads and from vegetation management activities, and 2) to minimize the disturbance of soil adjacent to waterbodies. The study team identified number of stands proposed for thinning under Alternative 4 that are within 100 feet of a perennial stream or wetland or within 50 feet of an intermittent stream. **Table 3.1-3** lists these stands, by compartment, as well as the acreage of each of these stands within the affected riparian corridors.

**Table 3.1-3. Stands Proposed for Thinning within Riparian Corridors under Alternative 4**

| Comp. | Stand # (and Acreage of Each Stand) within a Riparian Corridor | Total Acres in Riparian Corridor by Compartment |
|---|---|---|
| 113 | #03 (1.08 acres); #04 (0.32 acres); #08 (3.08 acres); #09 (0.91 acres); #13 (0.01 acres); #24 (1.48 acres); #26 (0.09 acres) | 6.06 acres |
| 114 | #01 (0.99 acres); #10 (0.62 acres); #11 (1.10 acres); #12 (2.70 acres); #22 (0.36 acres); #28 (0.44 acres); #40 (2.49 acres); #88 (1.09 acres) | 9.79 acres |
| 117 | #03 (2.85 acres); #10 (2.04 acres); #14 (0.12 acres); #17 (0.22 acres); #19 (0.26 acres); #20 (2.24 acres); #28 (4.62 acres); #29 (0.40 acres) | 12.75 acres |
| 118 | #01 (0.003 acres); #04 (2.02 acres); #06 (0.32 acres); #17 (4.58 acres);#18 (0.31 acres); #28 (9.42 acres) | 16.64 acres |
| 119 | #02 (0.8 acres); #03 (0.33 acres); #07 (8.42 acres); #09 (0.6 acres); #13 (0.15 acres); #9.92 acres); #24 (2.75 acres) | 21.64 acres |
| Total Acreage within Riparian Corridors | | 66.88 acres |

Alternative 4 would reduce the acreage of treated stands that are within established riparian corridors by about 20 acres, with the greatest reduction occurring in Compartments 118 and 119. Under Alternative 4, the potential for adverse impacts on the unnamed stream bisecting Compartment 118, as well as the extensive wetland associated with Falling Creek (along the boundary of Compartments 118 and 119), would be noticeably reduced from Alternative 2.

Since several stands would be omitted from vegetation management activities under Alternative 4, associated temporary road reopening and log landing development would also be reduced. Approximately 17 miles of temporary roads would be reopened under this alternative, and 137 log landings created. This alternative would eliminate the need to reopen extensive stretches of individual temporary roads, reducing road-related adverse impacts on water quality and aquatic species on a localized level.

Overall, adverse impacts on water quality and aquatic species from Alternative 4 would be noticeably less than those discussed under Alternative 2. Those localized impacts that would occur would still be short-term and minor in intensity.

### *3.1.1.3 Cumulative Impacts*

Although Alternative 1 would not result in any direct, adverse impacts on water resources or aquatic species, the beneficial effects from gully restoration and road maintenance activities

would not occur under this alternative. This alternative would not work toward improving water quality or aquatic habitat on the Forest. However, since other Forest activities are aimed at erosion and sediment control and improving degraded water quality, Alternative 1 would not contribute to significant, adverse, cumulative impacts on water resources or aquatic species.

Although some SPB suppression activities have been conducted on National Forest lands within the project area within the past few years, little timber harvesting has occurred on these lands over the last decade or so. However, the USFS has implemented periodic prescribed burns on lands in the project area. Prescribed fire can lead to short-term increases in soil erosion, runoff, and sedimentation due to a loss of understory vegetation, which can adversely affect water quality and aquatic species. Cumulative impacts on water resources and aquatic species from prescribed burning, however, are considered minimal, as understory vegetation quickly reestablishes in burned areas to stabilize soils and reduce sediment (USDA, 1989a).

Impacts on water resources and aquatic species from timber harvests are normally recovered before a new cycle of harvesting begins, and as a result, cumulative impacts from successive harvesting operations would be expected to be minimal for the majority of harvested areas. In those areas that produce a significant amount of grasses and legumes following harvest operations, increased water infiltration and reduced runoff and sedimentation would be anticipated. Resultant soil stabilization can provide long-term benefits water resources. Areas that are repeatedly used for logging decks and skid trails in stands that have frequent entries have the potential to suffer more continuous periods of increased water runoff, and subsequent erosion and sedimentation impacts. Although rehabilitation of these sites decreases the duration of these adverse water quality impacts and lessens the potential for cumulative degradation of water resources, the reopening and use of these areas during successive harvest operations generally results in increased sediment and decreased water quality and aquatic species habitat in the vicinity of these sites.

Agricultural and timber harvest activities on private lands are expected to contribute to both short-term and long-term adverse impacts on water resources and aquatic species and would interact cumulatively with the proposed activities under Alternatives 2, 3, and 4. However, overall cumulative impacts from these activities on private lands are expected to be minimal, since the majority of the project area is forested and would remain in forested land use, which contributes comparatively little sediment relative to private uses.

# 3.2 BIOLOGICAL ENVIRONMENT

## 3.2.1 Vegetation and Wildlife, Including Proposed, Endangered, Threatened, and Sensitive (PETS) Species

*Element:* The Proposed Action and its alternatives could change vegetative composition and structure within the project area, subsequently affecting the availability of habitat for wildlife species, including the RCW, other PETS species, and management indicator species (MIS) within the project area.

*Measurements:*

- Changes in available habitat for MIS and general wildlife within the project area
- Changes in forest health (changes in general forest conditions, SPB incidences, and noxious weeds)
- Effects on the RCW and available habitat for the species
- Effects on other PETS species

*Bounds for Analysis:*

- Spatial: The area potentially affected by the proposed activities includes habitat within and immediately adjacent to the project area streams. Effects could occur from stands within the project area to a short distance around, but outside of, the project area.
- Temporal: Temporary effects include those effects lasting only during the actual treatments/activities. Short-term effects include those effects lasting up to a few years following cessation of activities. Long-term effects would be those effects that would last more than a few years, or those that would be permanent.

### *3.2.1.1 Affected Environment*

Biological diversity (biodiversity) refers to 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. Although the different aspects of biodiversity can be subdivided as finely as desired, the most significant parts are community diversity, species diversity, successional diversity, and interaction among elements (USFS, 2001).

The vast majority of Compartments 113, 114, 117, 118, and 119 is forested, with a mosaic of evergreen, deciduous, and mixed (hardwood-pine and pine-hardwood) forest communities. Compartments 117 and 114 are primarily in deciduous and mixed forest cover, while Compartments 113, 118, and 119 are primarily in evergreen forest cover. Private lands are intermingled with public lands throughout the area. These private lands include pastures, private woodlots, industrial forested land, homes, and some small farm acreage.

Within these compartments, 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 (*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 (USFS, 2001).

Successional 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 the forest matures. All successional stages are necessary to maintain diversity.

Of the forest stands proposed for thinning under Alternative 2, approximately 60 percent are mature loblolly pine sawtimber, 11.5 percent are immature loblolly pine sawtimber, and 28.5 percent are loblolly pine pole timber/precommercial. **Table 2.2-1** in Chapter 2 of this EA provides a breakdown of stand classes by compartment. Mature pine sawtimber includes age classes 61 to 80 years, immature pine sawtimber includes 41 to 60 year old stands, and pole timber includes stands that are 21 to 40 years old. Habitats of other age classes, including early successional stages (0 to 20 years old), are also interspersed on private and public lands within and around the project area. 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, woody vines, and briars.

The majority of the forested stands within the project area currently have high basal areas and a closed canopy. However, since the late 1990s, part of the canopy has opened up throughout the Oconee National Forest as a result of SPB infestations and subsequent pine mortality. Groups of tall, infested pines varying in size from one to more than 25 acres eventually give way to an emerging deciduous and evergreen overstory (USFS, 2004b). Within the project area, the USFS has implemented cut-and-leave and salvage programs to suppress infestations. In 2000, cut-and-leave suppression was conducted on various SPB spots within the project area. Most spots resulted in canopy openings of less than 1 acre to a few acres. In addition, the USFS has conducted prescribed burning within the project area since the early 1980s, generally burning patches within each compartment every few years to open up the understory.

**Management Indicator Species**

The Oconee National Forest hosts approximately 350 species of wildlife and fish and 1,500 species of plants (USFS, 2001). This great number of species makes it difficult to manage for every species on every acre of the Forest. Therefore, the USFS has identified 15 MIS for the Chattahoochee-Oconee National Forests to represent the many different ecological communities and associated successional stages and species within the Forest. The primary objective with every project is to ensure that viability of any species present is not adversely affected. National Forests use MIS as a tool for identifying specialized habitats and creating habitat objectives and standards and guidelines. The idea behind the MIS concept is to identify a few species that are representative of many other species, and to evaluate management direction by the effects of management on MIS habitats. Both population and habitat data are used to monitor MIS on National Forests. Trends in MIS populations are normally assessed relative to trends in their respective habitat.

Of the 15 terrestrial MIS, 4 do not occur on the Oconee National Forest (or, in the case of birds, may occur, but do not breed on the Forest). These MIS include the black bear (*Ursus americanus*), smooth coneflower (*Echinacea laevigata*), chestnut-sided warbler (*Dendroica pensylvanica*), and ovenbird (*Seiurus aurocapillus*), (USFS, 2004b).

The following is a description of the 11 terrestrial MIS that do occur on the Oconee National Forest 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 (Empidonax virescens)*

The habitat for the Acadian flycatcher consists of deciduous forests near streams with a moderate understory. This bird typically constructs its nest in branches directly overhanging streams. It requires a high dense canopy with an open understory (USFS, 2003b; NatureServe Explorer, 2002). Acadian flycatcher habitat is currently fairly good, with riparian areas common across the forest and in generally good condition (USFS, 2001; 2003b). Population levels have been relatively stable for this species on the Forest, with surveys showing an increasing trend in abundance Statewide during the past 35 years. The quality and integrity of riparian habitat on the Forest is expected to remain constant over time (USFS, 2003b).

*Pileated Woodpecker (Dryocopus pileatus)*

The pileated woodpecker is associated with mature (60+ years) and extensive hardwood and hardwood-pine forest. Deciduous forests are preferred over coniferous forests. The species is found in deep woods, swamps, river bottom forests, and open, upland forest of mixed types. The species bird forages and nests on and in dead trees (snags), with some foraging also occurring on fallen logs and other forest debris (USFS, 2001; 2003b). It prefers woods with a tall, closed canopy and a high basal area (NatureServe Explorer, 2002).

Bird survey data indicate that pileated woodpecker populations have remained relatively stable both on the Forest and throughout the State over the past 10 years. In addition, habitat for the species has been relatively stable over the past 15 years, and is expected to remain stable or increase in the future (USFS, 2003b).

*Hooded Warbler (Wilsonia citrina)*

Hooded warblers are primarily found in mature (although young forests can also be used), mesic deciduous forests with a dense understory and midstory structure. The species nests in the understory of deciduous forests, especially along streams and ravine edges, as well as thickets in riverine forests. A dense shrub layer and scant ground cover are important to the species (NatureServe Explorer, 2002).

*Field Sparrow (Spizella pusilla)*

The field sparrow prefers old fields, brushy hillsides, overgrown and weedy pastures, thorn scrub, deciduous forest edge, untilled and idle cropland, brushy woodlands, sparse second growth, hedgerows, and fencerows. The species nests on or near ground in weed clumps or grass tufts. Woody vegetation and dense grass appear to be critical components for habitat suitability. Optimal habitat includes dense, moderately tall grass, and low to moderate shrub density (NatureServe Explorer, 2002).

*Prairie Warbler (Dendroica discolor)*

The prairie warbler is an early-successional species that is found in areas with shrubby vegetation, including brushy second growth, dry scrub, low pine-juniper, mangroves, pine barrens, burned-over areas, sproutlands, abandoned fields, powerline corridors, and revegetating strip-mined areas. Breeding habitats for the species are typically suitable beginning about 5 years after burning or clearing, and continuing for about 10 to 20 years. The species typically nests in a shrub, sapling, thicket, or fern clump (NatureServe Explorer, 2002).

*Wood Thrush (Hylocichla mustelina)*

The wood thrush is a forest interior species typically found in mature deciduous or mixed forests with a dense tree canopy and a fairly well-developed deciduous understory. Bottomlands and other rich hardwood forests are optimal habitats. The species is also found in pine forests with a deciduous understory (NatureServe Explorer, 2002).

*Scarlet Tanager (Piranga olivacea)*

The scarlet tanager is an MIS for the upland oak community, and is not very common on the Oconee National Forest (USFS, 2004b). The species is found in deciduous forests and mature deciduous woodlands, including deciduous and mixed swamp and floodplain forests and rich moist upland forests, preferring oak trees. The species nests most commonly in areas with a relatively closed canopy, dense understory with a high diversity of shrubs, and scanty ground cover. The species also sometimes nests in wooded parks and orchards (NatureServe Explorer, 2002).

*Swainson's Warbler (Limnothlypis swainsonii)*

Swainson's warbler is found in early-successional riparian habitats in the Piedmont, and is strongly associated with canebrakes, tangles, and thick shrubby understories of open bottomland hardwoods and mixed forests. The species is found in rich, damp, deciduous floodplain and swamp forests, requiring areas with deep shade from both canopy and understory cover. The species nests in understory canes, shrubs, vine tangles, and similar sites, typically within about 200 meters of open water (NatureServe Explorer, 2002).

*Pine Warbler (Dendroica pinus)*

The pine warbler is associated with pine and pine-oak forests, generally occurring only where some pine component is present. The highest numbers of the species occur where pure stands of pine are found; the species is less abundant as the proportion of hardwood tree species increases. Optimal nesting habitat for the species is provided by pure, dense, mature pine stands that lack a tall understory (NatureServe Explorer, 2002).

*Red-cockaded Woodpecker (Picoides borealis)*

The red-cockaded woodpecker (RCW), a federally listed endangered species, currently occupies habitat on the south end of the Oconee National Forest and in the Piedmont National Wildlife Refuge, which is just outside of the project area. According to the revised RCW Recovery Plan, the Oconee National Forest and Piedmont National Wildlife Refuge together make up one secondary core recovery population of RCW, referred to as the Piedmont Recovery Unit. The plan defines a secondary core population as "a population identified in recovery criteria that will hold at least 250 potential breeding groups at the time of and after delisting." In 2000, the Piedmont Recovery Unit had 59 breeding pairs—20 on the Oconee National Forest (including the Hitchiti Experimental Forest) and 39 on the Piedmont National Wildlife Refuge.

Under the direction of the RCW Final EIS and ROD and the ESA, the Oconee National Forest must not jeopardize endangered species and must carry out programs for their conservation (16 U.S.C. 1536 (a)). Therefore, the Oconee National Forest must protect all cavity trees, protect foraging and nesting habitat, and provide future foraging and nesting habitat. 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 on the Oconee National Forest.

The RCW uses open pinewoods, which can be longleaf (*Pinus palustris*), loblolly (*P. taeda*), shortleaf (*P. echinata)*, or slash (*P. elliotti*). Habitat is generally of mature trees (80+ years) with little or no midstory (resembling a park-like conditions). RCWs nest and roost each day in cavities they excavate in live pine trees (USFS, 2001; USFWS, 2002).

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 to 60 year old stands in the County is 11 percent. The percentage of future foraging and nesting habitat is 41 percent, and RCW habitat that is 60 years old loblolly pine makes up 47 percent (USFS, 2001). Currently, potential foraging habitats within the project area of Jasper County 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 (Odocoileus virginianus)*

White-tailed deer are very adaptable and use a variety of habitat types and successional stages to meet their year-round needs. Grassed openings and closed temporary roads, along with regeneration areas, supply the early successional habitats preferred by the species. Foraging habitat is represented in all forest age classes up to 80 years. Availability of browse and escape cover year-round and hard mast during the fall and early winter are key factors for white-tailed deer success. Riparian habitats supply much of the hard and soft mast (USFS, 2001; 2003c).

While there has been a slight decrease in the availability of deer browse on the Forest over the past 10 years due to a decline in early successional habitat, the white-tailed deer is very adaptable. Deer populations are higher on the Oconee (Piedmont) than in the Georgia

mountains, with both populations stable to increasing. Since the deer population has been at or above carrying capacity in the Piedmont, State regulations have been liberalized to help reduce population densities to within habitat capability levels (USFS, 2003b).

## Locally Rare Species

From a list of 84 plants listed on the Chattahoochee-Oconee National Forest 2002 Locally Rare Species List (USFS, 2002b), the GNHP indicates the Carolina windflower (*Anemone caroliniana*), log fern (*Dryopteris celsa*), and southern twayblade (*Listera australis*) occur in Jasper County. Although the Carolina windflower and log fern are known from the surrounding area, none of these species are known from the project area (GDNR, 2003).

From a list of 23 animal species (not including aquatic animal species) listed on the Chattahoochee-Oconee National Forest 2002 Locally Rare Species List (USFS, 2002b), the GNHP indicates the four-toed salamander (*Hemidactylium scutatum*) occurs in Jasper County. The four-toed salamander has been recorded from the Hillsboro Northwest, Southwest, and Southeast Quarter Quads, all of which contain land within the project area. The four-toed salamander is known to inhabit swamps, boggy streams and ponds, and wet woods (GDNR, 2003).

## Proposed, Endangered, Threatened, and Sensitive (PETS) Species

There are 116 species (26 federally listed and 90 sensitive) on the Chattahoochee-Oconee National Forest PETS species 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 GNHP historical records, and 3) consultations with other agencies and universities, as well as reviewing data from Neotropical Migratory Bird (NTMB) Point Samples, GDNR Bald Eagle Flights, Breeding Bird Census Routes, PETS Risk Assessment for the Oconee National Forest, and general observations (Caldwell, 2004). The following 11 terrestrial PETS species are within the range of the Oconee National Forest based on a review of the above sources.

| Common Name | Scientific Name | Status |
|---|---|---|
| (Plants) | | |
| Relict trillium | *Trillium reliquum* | Federally Endangered |
| Oglethorpe oak | *Quercus oglethorpensis* | Sensitive |
| Scherwin's false indigo | *Amorpha schwerinii* | Sensitive |
| Bay Starvine | *Schisandra glabra* | Sensitive |
| (Terrestrial Animals) | | |
| Red-cockaded woodpecker | *Picoides borealis* | Federally Endangered |
| Bald eagle (nests) | *Haliaeetus leucocephalus* | Federally Threatened |
| Wood stork (foraging habitat) | *Mycteria americana* | Federally Endangered |
| Bachman's sparrow | *Aimophila aestivalis* | Sensitive |
| Migrant loggerhead shrike | *Lanius ludovicia migrans* | Sensitive |

| | | |
|---|---|---|
| (Insects) | | |
| Appalachain snaketail | *Ophiogomphus incurvatus* | Sensitive |
| Margarita river skimmer | *Macromia margarita* | Sensitive |

Of these, all but 3 were dropped from further consideration because their range does not extend into the project area or their specific habitat requirements are not found in the areas of proposed activities. A detailed rationale for elimination of these species is presented in the Biological Evaluation (BE) available in Appendix E of this EA (Caldwell, 2004).

*Oglethorpe Oak*

The extent of the area occupied by Oglethorpe oak is known and documented. This species occurs in Compartment 109. The project location is five miles from the area where Oglethorpe oaks have been identified. This species usually occupies moist, low-lying sites in Iredell soils, which are not usually full pine stands (Caldwell, 2004).

*Red-cockaded Woodpecker (RCW)*

The RCW currently occupies habitat on the south end of the Oconee Ranger District and the Piedmont National Wildlife Refuge within the project area. It is most abundant on the Hitchiti Experimental Forest (14 active cluster sites) and the Piedmont National Wildlife Refuge (39 cluster sites). One active and one inactive cluster are located in Compartment 114. The areas that have had RCW use or contain recruitment stands are Compartments 107, 113, 115, 117, 118, and 119. These are located along the boundary of the Refuge. This species uses open pinewoods, which can be longleaf, loblolly, shortleaf, or slash. Habitat is generally of mature trees with little or no midstory (resembling a park-like stand). RCWs nest and roost each day in live pine trees. The dead pine trees (snags) created by the SPB infestation are an ephemeral foraging habitat, which will soon disappear. RCW are located in the project area and protection from further SPB infestation is necessary to provide for future foraging and nesting habitat. There are currently 7 inactive cluster sites and one active cluster site within the project area. Several acres of potential recruitment areas for the RCW exist within the project area (Caldwell, 2004). This species is described in further detail under MIS above.

*Bachman's Sparrow*

This species is found within open southern pine forests subject to frequent fires. The specific habitat this species prefers is large areas of well-developed bunch grass and herb layer with limited shrub and hardwood midstory. This bird has been detected by Point counts done during the nesting season for Neotropical birds. Bird inventories are done on the forest yearly. Reports from the GDNR and the Piedmont National Wildlife Refuge found several RCW sites in the Refuge with Bachman sparrows present last year. Bachman sparrows have been identified in Compartment 114. Even though this species has not been reported on the Oconee National Forest in the past, it did occur within some stands last year within the RCW areas (Caldwell, 2004).

### *3.2.1.2 Environmental Consequences*

Habitat alteration changes the diversity and abundance of wildlife species in a given area. Vegetation management can affect each species' habitat in a different way, benefiting some species, while harming others. Planning regulations define diversity as "the distribution and abundance of different plant and animal communities and species within [an] area…" (36 CFR 219.3(g).

In general, forested areas that are in various stages of development and include periodic openings support a wide diversity of species and habitats. The maintenance of forest habitat diversity tends to increase wildlife populations and land values, since the majority of animals do not utilize a single stand or single forest type throughout their lives. Management activities that encourage layering of different types of vegetation, including prescribed burning, thinning, and occasionally herbicides, increase wildlife diversity. Impacts beneficial to wildlife are typically greater with a combination of management activities versus any of the treatments separately.

**Alternative 1 (No Action: Current Management)**

*Vegetation*

Under Alternative 1, no thinning activities would occur. Without the increased light to the forest floor provided by thinning, understory development would be limited to that produced naturally, and that produced as a result of occasional prescribed burns. Any understory development would be limited to woody vegetation, such as sweetgum, red maple, pine seedlings, blackberry, and dogwood. Only small increases in grasses and legumes would occur, most often near roadsides and in openings. Soil conditions in the project area would remain intact, and no reductions in soil plant productivity would occur.

In the absence of thinning, the general health of forest stands in the project area would likely decline gradually and stabilize at a new lower level. The incidence of SPB attacks, which are significantly decreased by reducing stand density and removing infected trees from a given stand, would increase, as infected trees spread the beetle to those trees nearby. Forest stands in the project area would continue to develop overcrowded conditions, resulting in greater competition for nutrients, decreased growth, and increased potential for infection and insect attack, as well as increased natural mortality rates. Given the real possibility of SPB attacks under these conditions, an increase in salvage logging operations may become necessary.

Under Alternative 1, no noxious weed control would occur within the project area. If left uncontrolled, noxious weeds would continue to spread, would take over surrounding natural vegetation, and would become a much bigger problem over the long-term. Tree health would decline, which could increase the susceptibility of trees to SPB infestations.

*General Wildlife*

Under the Alternative 1, no thinning or other vegetation management activities would occur. The forest stands within the project area would continue to mature, and canopies would gradually close, reducing light and decreasing understory vegetation. Understory vegetation would primarily consist of shade-tolerant species, and herbage would be sparse. Implementation of this alternative would benefit those species dependent on mature forest for foraging habitat and cover.

Over time, seedling/shrub habitat within the project areas would develop into poletimber habitat, which would then develop into sawtimber habitat. This progression would create a more mature and continuous forest canopy, benefiting wildlife that require this type of habitat. However, over a prolonged period of time, the abundance of sweetgum and other pioneering species within the project area would increase, and these would slowly overtake pine and hard mast species. This could be detrimental to those species that prefer pine or mixed pine forests.

Early successional habitat and edge habitat would not be created, unless pine mortality occurs. Gap-phase dynamics would likely occur, where some trees within the stands die for a variety of reasons, and are replaced by trees in the midstory or by new reproduction. Small areas of early successional habitat may be created as pine mortality occurs. As trees die, increased sunlight would reach the floor in those locations, resulting in increased herbaceous understory growth in those areas. However, breaks in the forest canopy as a result of dead or dying trees would be short-term, as surrounding trees grow and close up the canopy (Baker and Hunter, 2002).

Implementation of Alternative 1 would increase the potential for SPB infestation within the project area. If SPB infestation were to occur within these areas, sanitation cuts would be necessary to control the disease. Sanitation cuts would result in small clearcut areas within the forest stand, which would be beneficial to some species by providing openings, early successional habitat, and edge habitat, but could be detrimental to other species, including forest-interior species.

Under Alternative 1, the USFS would not make any deliberate attempts to create wildlife habitats (openings, installation of wildlife structures) within the project area. While none of the benefits on wildlife from these activities would occur, this alternative would not directly adversely affect wildlife; existing conditions would continue.

*Management Indicator Species*

*Acadian Flycatcher*

Implementation of Alternative 1 would have no effect on riparian deciduous forested habitat for the Acadian flycatcher. Habitat trends and patterns for this species in the area would continue.

*Pileated Woodpecker*

Implementation of Alternative 1 would have a beneficial effect on habitat for the pileated woodpecker. The forest within the project area would continue to mature, and basal areas would remain high, under this alternative. Pileated woodpeckers would be attracted to the area, particularly to mixed forest areas.

*Hooded Warbler (Wilsonia citrina)*

Implementation of Alternative 1 would not affect the availability or structure of mature, mesic deciduous forested habitat for the hooded warbler. Habitat trends and patterns for this species in the area would continue.

*Field Sparrow (Spizella pusilla)*

Implementation of Alternative 1 would have no effect on the field sparrow, since no old fields, woodlands, or other preferred habitat of the species would be affected. Habitat trends and patterns for this species in the area would continue.

*Prairie Warbler (Dendroica discolor)*

Implementation of Alternative 1 would not noticeably affect habitat for the prairie warbler. While stands within the project area would continue to become more crowded under this alternative, increasing the potential for pine mortality and SPB infestations and associated salvage cuts, any resultant early successional habitat created by pine mortality would provide only a small amount of short-term marginal habitat for the species.

*Wood Thrush (Hylocichla mustelina)*

The project area would continue to provide habitat for the wood thrush under Alternative 1, benefiting the species over the long-term. Deciduous species would continue to increase in the understory and midstory of the project area under this alternative, and the tree canopy would continue to be dense, providing suitable habitat for the wood thrush. Over time, portions of the project area, particularly areas of mixed forest and deciduous forest, would likely become more suitable for the species, and populations of the species in the project area would likely increase.

*Scarlet Tanager (Piranga olivacea)*

Implementation of Alternative 1 would have no effect on upland oak or other deciduous forested habitat for the scarlet tanager. Habitat trends and patterns for this species in the area would continue.

*Swainson's Warbler (Limnothlypis swainsonii)*

Implementation of Alternative 1 would have no effect on early-successional riparian or deciduous floodplain/swamp forested habitat for the Swainson's warbler. Habitat trends and patterns for this species in the area would continue.

*Pine Warbler (Dendroica pinus)*

Implementation of Alternative 1 would have an adverse effect on the availability of pine warbler habitat in the project area. Without the proposed vegetation management, the proportion of pioneering hardwood species in the understory of the project stands would increase, decreasing the suitability of the area for the pine warbler over the long-term.

*Red-cockaded Woodpecker*

Habitat for the RCW would not be favored or created under Alternative 1. Although the pine stands within the project area would become more mature with time under this alternative, they would continue to be overstocked and would become more crowded. Over time, potential RCW foraging and nesting habitat within the project area would become less suitable as future habitat for the species. Although Alternative 1 would not directly affect the RCW, indirect effects on potential habitat for the species would be adverse.

Currently, much of the potential RCW foraging habitat within Jasper County is fragmented and has thick midstory vegetation, which hinders RCW foraging and increases competition from other vertebrates. Under Alternative 1, the abundance of overstocked stands of early- to mid-successional pine trees (potential RCW foraging and nesting habitat) would continue. The USFS would neither be protecting existing habitat nor providing future foraging and nesting habitat for the RCW in the project area under this alternative. RCW would not be able to be recruited to the project are in the future if no vegetation management activities are conducted.

*White-tailed Deer*

Implementation of Alternative 1 would not affect the white-tailed deer or its habitat on the Forest, since this species utilizes so many different habitat types and is extremely adaptable. The project area would continue to project habitat for the species over the long-term, and populations would be expected to continue under current trends and patterns.

*Locally Rare Species*

Since no locally rare plants are known from the project area, implementation of Alternative 1 would not have any effect on these species. Although the four-toed salamander is known to inhabit swamps, boggy streams and ponds, and wet woods within or adjacent to the project area, Alternative 1 would have no effect on this habitat. Therefore, no effects on locally rare animal species would occur as a result of Alternative 1.

*Proposed, Endangered, Threatened, and Sensitive (PETS) Species*

*Oglethorpe Oak*

Alternative 1 would have no effect on the Oglethorpe oak.

*Red-cockaded Woodpecker*

There are currently seven inactive RCW cluster sites and one active RCW cluster site within the project area, and several acres of potential RCW recruitment exist in the area. Under Alternative 1, no thinning or midstory control would occur, and RCW habitat within and adjacent to the project area would be lost over the long-term. RCW would not be able to be recruited to the project are in the future if no vegetation management activities are conducted. The No Action alternative may adversely affect the species and would result in a violation of the ESA, RCW EIS guidelines, the RCW Recovery Plan, and the current Forest Plan for the Chattahoochee-Oconee National Forests.

*Bachman's Sparrow*

Likewise, Bachman's sparrow habitat would not be promoted under Alternative 1, and potential habitat for the species within the project area would be lost over the long-term.

**Alternative 2 (Proposed Action: RCW Habitat Restoration)**

*Vegetation*

*Thinning and Midstory Control*

Under Alternative 2, thinning would remove both non-hard mast-producing hardwoods (sweetgum, elm, and maple) and softwoods (loblolly pine). Thinning would have slightly different effects on vegetation, depending primarily on the age class of the stand and the level of harvest extraction. Thinning activities would promote optimal tree spacing and improve the health of the forests in the area. Evidence suggests that the increase in tree growth vigor and selective cutting of diseased and stressed trees significantly reduces the risk of loss from SPB attacks and other diseases (Belanger et al., 2000).

Thinning generally results in greater light penetration to the forest floor, and as a result, induces both woody and herbaceous understory growth. Vegetation diversity on the forest floor would increase immediately following thinning, with the greatest diversity and abundance likely to occur within the first six to eight years (Miller et al., 1995). Without further vegetation control, the abundance of grasses and forbs would slowly diminish with development of woody vegetation in the shrub and subcanopy layers, and as the tree canopy slowly closes. However, under Alternative 2, a combination of herbicide use, mechanical treatments, and prescribed burning to control midstory vegetation within thinned areas and areas immediately adjacent to thinned areas would reduce the development of woody vegetation and promote and maintain understory growth. Prescribed fire would be conducted during the dormant season and growing

season, depending on location and time of year. Dormant burns are conducted when herbaceous plants are below ground and not impacted by fire.

Thinning activities do come with some biological risks, including potential for physical damage that can occur to residual trees as a result of the harvesting process, to soils on which future plant growth and/or biomass production may be reduced (i.e., on highly eroded or compacted areas), and to existing shrub and herbaceous vegetation damaged as a result of the harvesting process. Physical damage to residual trees as a result of harvesting activities is normally minor. Sites would be reviewed and approved prior to harvest to ensure that log landing and skid trail locations are appropriately planned to minimize soil impacts and damage to residual trees. Damage to existing shrub and herbaceous vegetation during the harvesting process would be temporary, and plants in the understory would quickly regain their vigor due to increased light availability to the forest floor.

*Road Rehabilitation/Construction and Maintenance*

Temporary road construction and reopening operations, as well as construction of log landings and skid trails, would require the clearing of vegetation within the road right-of-way, as well as the disturbance and compaction of soils along the road travelway. Thus, road construction would result in both the direct removal of vegetation and in a reduction in the ability of soils along the roadway to support plant growth. The extent of the vegetation clearing would be dependant on how long it has been since the temporary road was last used (i.e., cleared). Reopening temporary roads within the project area would likely require the removal of woody vegetation and shrubs, and potentially a few saplings. New temporary road construction, on the other hand, may involve the removal of larger trees. However, only a small amount (approximately one mile) of temporary road is proposed for construction under Alternative 2. Therefore, removal of this vegetation would not likely have a noticeable effect on forest cover or forest health.

For the most part, impacts on vegetation from temporary roads, log landings, and skid trails would be short-term. The majority of these areas would be seeded with native vegetation upon completion of timber harvest activities and allowed to vegetate. This would increase the proportion of the stand covered by grasses and legumes, provide forage for wildlife, and decrease the amount of time required to rehabilitate compacted or disturbed soils. Small trees would quickly develop along these sites from seed sources in the nearby stands; however, these areas would continue to have reduced soil productivity and full recovery may take many years (USFS, 1989a). Soil compaction effects on these sites are generally long-term; as a result, soil productivity can be reduced for decades. However, the USFS would require that compacted areas be tilled prior to seeding to reduce the potential for this adverse effect.

Pre-haul and heavy pre-haul maintenance activities may involve removal of some roadside vegetation to increase visibility and enhance surface conditions. However, any impacts on vegetation resulting from these activities would be minimal, as only early successional vegetation would be removed or damaged. No new permanent road construction would occur under Alternative 2.

*Other Activities*

Of the other activities proposed under Alternative 2, eradiation of the noxious weeds within the project area would have the greatest effects on vegetation. Adverse impacts on non-target and natural vegetation during herbicide application would be negligible, due to the use of direct foliar spray herbicide delivery methods. Any adverse effect on natural vegetation resulting from herbicide use would be short-term in duration, as any killed vegetation would quickly be replaced with new vegetation.

Rather, long-term, beneficial effects on vegetation would occur as a result of this activity. Efforts to eradicate kudzu and privet from the project area would allow natural vegetation to reestablish in infested areas, and would prevent the potential for the invasive species to spread onto adjacent sites and kill the vegetation on those sites.

*General Wildlife*

*Thinning and Midstory Control*

Vegetation management activities can affect wildlife directly through disturbance, injury, or mortality. While the use of heavy equipment during thinning activities could cause some direct mortality of some animals, most animals would temporarily move from the area during thinning activities due to human disturbance and the noise generated from the equipment. Typically, vertebrate species are able to escape in advance of equipment and not be harmed. However, some reptiles and amphibians may be killed by equipment (USFS, 1989a). Because of large populations, direct mortality of some individuals would not hurt populations as a whole. Noise generated from the use of heavy equipment or hand-held equipment for midstory control would temporarily disturb and/or startle wildlife within and adjacent to the project areas, and could cause the temporary displacement of these species. Noise from these activities may also cause nesting birds to abandon nest sites and their young, if thinning activities occur during nesting season. However, since noise-generating equipment would only be used for a short duration, any displaced wildlife would be expected to return to the area upon completion of activities. In addition, there would be undisturbed forest stands in each of the compartments, as well was in other surrounding compartments, for the displaced wildlife during vegetation management activities.

Vegetation management activities can also affect wildlife indirectly through short-term and long-term habitat alteration. Although thinning and midstory control can temporarily reduce cover, food sources, and habitat from site preparation activities and the timber harvest itself, thinning also reduces the basal area (BA) and canopy coverage within stands over the short-term. Opening up the forest canopy encourages understory growth and leads to improved wildlife habitat. Thinning allows light to reach the forest floor, which increases the amount and growth rate of wildlife food plants, including berries, forbs, and shrubs (Schultz, 1997; Baker and Hunter, 2002). Reducing the proposed treatment stands to approximately 60 BA under Alternative 2 would considerably open up the forest stand, most noticeably in stands that currently have the highest BA.

In addition to thinning, midstory control would be conducted within the project area, both on thinned stands and on some adjacent stands that would not undergo thinning. Midstory control would result in a more open forest setting, and would further increase understory growth by increasing available sunlight and nutrients.

Thinning activities themselves neither create openings nor result in forest fragmentation. Although the major forest composition post-thinning would remain basically the same as pre-thinning conditions, vertical diversity would increase as the amount of understory species increases and as diameter growth of remaining trees increases. In loblolly pine stands, as the vertical diversity of vegetation increases, the number of wildlife species within the stand increases (Schultz, 1997). Thinning in dense stands can increase timber volume within the stand, and provide enhanced bird habitat (Meyers and Johnson, 1978).

In some cases, individual trees that are beneficial to wildlife due to their form may be removed during thinning, although den trees with cavities present and snags are retained per the minimum management requirements in the Forest Plan. Removal of trees used for nesting by birds could result in forceful abandonment of nest sites or direct mortality of young birds if thinning is conducted during nesting season.

Increases in forest health resulting from thinning also have beneficial impacts on wildlife. Animal diversity is closely related to plant diversity (USFS, 1989a). Soon after thinning is conducted, vigorous growth in the understory begins in response to the increase in light reaching the forest floor in thinned areas (Schultz, 1997; Cain, 1995). From this stage through the next few years, the abundance of birds and small mammals is typically the greatest. In response to an increase in prey activity, predatory mammal and raptor populations would increase in abundance (USFS, 1989a; Baker and Hunter, 2002; Perkins et al., 1988). This impact would be greatest in the stands proposed for a greater reduction in BA.

One- to two-year vegetation consists of dense stands of forbs and perennial grasses that make excellent habitat for small herbivores and small seed-eating mammals. However, most forage components, including herbage, vines, grasses, and woody vegetation, decrease with stand age (Mengak et al., 1988). In the third and fourth years, the grasses are replaced with shrubs, which do not favor the small seed-eating mammals, but does improve habitat conditions for birds. Under Alternative 2, midstory control and the use of prescribed burning on a three to five-year cycle would work to maintain forbs and perennial grasses in the understory of selected stands within the project compartments.

*Road Rehabilitation/Construction and Maintenance*

Under Alternative 2, roadwork would be conducted to allow for access to stands proposed for timber management activities, and would consist of road maintenance, rehabilitation, and temporary road reopening and construction. These activities would increase the amount of human disturbance to wildlife during vegetation management activities and disturb any nesting sites in the affected area. The creation and use of log landings and skid trails would remove trees and understory vegetation, which currently serve as food sources, escape cover, and breeding/nesting sites for wildlife.

During temporary road construction and reopening, a 12 to 15-foot-wide path would be cleared of trees and other vegetation. Since the treatment stands are proposed to be reduced to 60 BA, this small path width would not be any larger than the distance between trees in the project area post-thinning. Temporary road construction and reopening would likely neither result in an edge effect along the road, nor contribute to forest fragmentation.

Most of the temporary roads would not be surfaced/graveled; gravel would only be spread in dips, on steeper slopes, and at intersections with surfaced roads. Herbaceous vegetation would likely encroach onto the less often used portions of the roads long before road closure, which could provide early successional habitat for some species during thinning activities. However, it is unlikely that this habitat would be greatly used due to the presence of workers and disturbance from activities.

Upon completion of vegetation management activities, the majority of temporary roads, log landings, and skid trails would be seeded with native vegetation and allowed to fully vegetate. The seeding mixes include seed plants that are beneficial to wildlife as a source of forage and as a year-round source of seeds. Seeding of temporary roads would benefit wildlife by creating wildlife strips. These areas would also benefit insectivorous birds, since insects are more abundant in grasses than in thick forest floor litter. The open habitat created in these areas would benefit those species that prefer early successional habitat. Over time, as the surrounding forest matures, grasses and forbs in these areas would be shaded out and the forest canopy would close, and species that prefer mature forested habitat would be favored. However, to maintain a diversity of habitats within the project area, some log landings scattered throughout the project area would be maintained permanently as wildlife openings, and the USFS would plant fruit trees in selected wildlife openings to provide additional forage. These areas would provide early successional habitat for wildlife over the long-term. **Table 3.2-1** lists those stands, by compartment, in which a log landing would be maintained as a wildlife opening over the long-term.

**Table 3.2-1. Locations of Log Landings to be Maintained as Wildlife Openings by Compartment and Stand**

| Compartment | Stands |
|---|---|
| 113 | 9, 13*,15, 26 |
| 114 | 1*, 10, 22 |
| 117 | 4, 5, 10*, 14, 20, 21 |
| 118 | 6, 14*, 17, 20, 22 |
| 119 | 3, 7, 12, 14, 30* |
| *Fruit trees would be planted in these openings. | |

*Other Activities*

In addition to the above-mentioned thinning, midstory control, and road reconstruction/ maintenance activities, approximately 25 acres of old SPB sites would be reforested with loblolly pine seedlings within the project area under Alternative 2. These areas range in size from 0.25 acres to several acres. While these sites currently provide early successional wildlife habitat, this

habitat will only be available over the short-term, as early pioneering species would quickly establish and take over these areas if no action were taken. Reforestation of these sites with loblolly pine would provide for more continuous pine habitat over the long-term within the project area.

*Management Indicator Species*

*Acadian Flycatcher*

Implementation of Alternative 2 would not noticeably affect riparian deciduous forested habitat for the Acadian flycatcher. A small portion of the project area under Alternative 2 is located within riparian areas with mixed forest composition, which may have a minor amount of deciduous forest habitat interspersed. In these areas, habitat for the Acadian flycatcher may become less suitable under Alternative 2 due to reductions in the forest canopy. However, only a very small amount of marginal Acadian flycatcher habitat would potentially be affected under this alternative, and no noticeable affect on the species or its habitat would occur.

*Pileated Woodpecker*

Alternative 2 would not have a measurable adverse effect on pileated woodpecker habitat within the project area. The project area is primarily loblolly pine habitat, which is not preferred habitat for the pileated woodpecker. However, during thinning activities under Alternative 2, some mature hardwoods may be harvested, and thinning would occur in some mixed pine-hardwood stands. This may result in a loss of a small amount of habitat for the species. There would continue to be many acres of suitable habitat for the pileated woodpecker on surrounding public and private lands that would remain unaffected by Alternative 2, including preferred pileated woodpecker habitat. Alternative 2 would not affect deciduous river bottom forests.

*Hooded Warbler (Wilsonia citrina)*

Implementation of Alternative 2 is not anticipated to noticeably affect hooded warbler habitat within the project area. The proposed activities are targeting loblolly pine and mixed pine stands within the project area; mesic deciduous forest habitat would remain largely undisturbed by the project.

*Field Sparrow (Spizella pusilla)*

Neither the field sparrow nor its habitat would be affected by implementation of Alternative 2. None of the proposed activities would occur in habitats used by the species. The amount and availability of habitat for this species on the Forest would remain unchanged under this alternative.

*Prairie Warbler (Dendroica discolor)*

Implementation of Alternative 2 would create a small amount of habitat for the prairie warbler over the short- and long-term. Over the short-term, temporary roads, skid trails, and log landings

that are reseeded would provide early successional habitat for the species. Over the long-term, suitable early successional habitat for the species would be provided in selected log landing sites maintained as wildlife openings after completion of vegetation management activities. Repetitive prescribed burning of the project area would add to this beneficial effect. Alternative 2 would create habitat for the prairie warbler within the project area, and the species would likely be more attracted to the area than under current conditions.

*Wood Thrush (Hylocichla mustelina)*

The project area may currently contain a small amount of suitable habitat for the wood thrush. While mature, deciduous forested habitat would remain largely unaffected by project implementation, pine and mixed forested habitat that may currently be suitable for the wood thrush within the project area due to a dense tree canopy and a well-developed deciduous understory would become less suitable as a result of Alternative 2. Alternative 2 would reduce the deciduous understory/midstory component of the affected stands, and thinning activities would result in a much less dense forested canopy. However, since the habitat affected by the project is not optimal wood thrush habitat, implementation of Alternative 2 would only have minor adverse effects on wood thrush habitat, but would not noticeably affect its overall habitat availability on the Forest.

*Scarlet Tanager (Piranga olivacea)*

Implementation of Alternative 2 is not anticipated to affect scarlet tanager or its habitat within the project area. The proposed activities are targeting loblolly pine and mixed pine stands within the project area; upland oak and deciduous woodland/forest habitat would remain largely undisturbed by the project.

*Swainson's Warbler (Limnothlypis swainsonii)*

The project area may currently contain a small amount of suitable habitat for Swainson's warbler. While early successional riparian and bottomland hardwood forest habitat would remain largely unaffected by project implementation, mixed forested habitat that may currently be suitable for the Swainson's warbler within the project area due to a dense tree canopy and well-developed understory cover could become less suitable over the short-term as a result of Alternative 2. Thinning activities and midstory control under Alternative 2 would result in a much less dense forested canopy, which may make some areas unsuitable for the species. However, since the habitat affected by the project is not optimal Swainson's warbler habitat, and the amount of any marginally suitable habitat affected would be small, implementation of Alternative 2 is not anticipated to adversely affect the species or its overall habitat availability on the Forest.

*Pine Warbler (Dendroica pinus)*

The pine warbler would be beneficially affected by implementation of Alternative 2. Under this alternative, midstory control would be undertaken in pine stands to decrease the density of midstory, including the hardwood component. This would make the project area more suitable

as pine warbler habitat. In addition, reforestation of old SPB spots would provide more a more continuous pine forest cover in these areas, slightly increasing the amount of suitable habitat for the pine warbler over the long-term.

*Red-cockaded Woodpecker*

Activities proposed under Alternative 2 would enhance the quality of RCW habitat on the forest. Opening up the pine forest through thinning, with a focus on mature pine stands, and conducting midstory control through mechanical and chemical methods would not only improve forest health and reduce threats on RCW clusters from SPB infestations, but would make the project area more suitable for the RCW nesting and foraging. In combination with past and proposed future prescribed burning, which would maintain midstory control, the vegetation management activities under Alternative 2 would create ideal habitat for the RCW within the project area. Vegetation management in immature pine stands would enhance potential future habitat for the species within the project area, once the stands have matured. Likewise, old SPB spots that have undergone salvage cutting would be reforested with pine seedlings under Alternative 2. This would provide for additional future habitat for the RCW within the project area, as well as more continuous, pine forest stands.

Upon completion of vegetation management activities (thinning and burning) under Alternative 2, 10 to 20 RCW recruitment stands would be established within the project area. Inserts would be placed throughout these stands, which would provide nesting habitat for the species. The boundaries of RCW areas would be marked and monitored to ensure protection of the species and the habitat. In addition, nesting structures would be provided for squirrels within the recruitment stands to reduce competition for RCW nesting cavities.

Alternative 2 would be working toward the recovery objective for the RCW on the Oconee National Forest. In addition, this alternative would be keeping with the direction of the RCW Final EIS and ROD, Recovery Plan, and the ESA.

*White-tailed Deer*

Thinning would benefit the white-tailed deer by encouraging shrubby and grassy understory areas by opening up the forest canopy. Temporary roads, skid trails, and log landings that are reseeded would provide grasses for an early spring source of forage and as a year-round source of seeds. Alternative 2 would create habitat for the white-tailed deer within the project area, and the species would likely be more attracted to the area. Maintenance of early successional habitats in wildlife openings would supply high-quality browse for this species over the long-term.

*Locally Rare Species*

Since no locally rare plants are known from the project area, implementation of Alternative 2 would not have any effect on these species. Although the four-toed salamander is known to inhabit swamps, boggy streams and ponds, and wet woods within or adjacent to the project area,

Alternative 2 would not affect these areas (due to riparian corridor restrictions). Therefore, no effects on locally rare animal species or their habitat would occur as a result of Alternative 2.

*Proposed, Endangered, Threatened, and Sensitive (PETS) Species*

*Oglethorpe Oak*

The majority of the proposed vegetation management activities would occur in pine and pine-hardwood areas that would not have the Iredell soils that reflect the presence of the Oglethorpe oak. Mitigations would be made if areas meet the soil requirements or an Oglethorpe oak is present. Oglethorpe oaks would not be cut and proper procedures for release of the stems around the tree would be encouraged. Based on the plant survey information and soil information, further surveys are not needed at this time. Recent evaluations of the area provide sufficient information that the proposed activities would not impact the Oglethorpe oak if the species were located within the project area (Caldwell, 2004). Refer to Appendix E of this EA for more information on this species.

*Red-cockaded Woodpecker*

Effects from Alternative 2 on the RCW and its habitat are more fully discussed under MIS above. The immediate effect of thinning within the project area under Alternative 2 may be the loss of some foraging habitat. However, beneficial effects on RCW habitat would be anticipated over the long-term. SPB infestations have been serious during the past couple of years. This infestation has occurred because of the lack of reducing the stems per acre. Therefore, the removal or cutting of dense trees would result in a cumulative beneficial effect, since it would stop the spread of the SPB infestation and minimize loss of habitat. Based on the information that is within project file, RCW EIS Standards and Guidelines, general observations, and requirements of the RCW Recovery Plan, the species would not be adversely affected by thinning the stands to 40 and 60 BA to improve the foraging and nesting habitat for the RCW. Intervals of prescribed fire on a 2-5 year basis and midstory control (mechanical and chemical) would promote the optimal habitat requirements needed for the species. Growing season controlled burns are preferred and would be implemented when parameters can be met (Caldwell, 2004).

Alternative 2 is not likely to adversely affect the RCW. Implementation of the proposed activities would be in accordance with the ESA (Section 7), RCW EIS guidelines, RCW Recovery Plan, and the current Forest Plan for the Chattahoochee-Oconee National Forests (Caldwell, 2004).

*Bachman's Sparrow*

While implementation of Alternative 2 might disturb a few individuals, this effect is unlikely due to low population densities within the project area. Overall, Alternative 2 would benefit the Bachman’s sparrow by conducting vegetation control and lowering basal areas, thereby improving habitat conditions for the species within the project area (Caldwell, 2004).

**Alternative 3 (RCW Habitat Restoration without Herbicide Use)**

Short- and long-term impacts on forest vegetation and wildlife under Alternative 3 would be similar to those resulting from Alternative 2. Refer to the discussion of these impacts under Alternative 2 above. However, under Alternative 3, no herbicides would be used for noxious weed and midstory control within the project area; noxious weed and midstory control would be conducted using mechanical methods only. The impacts on vegetation and wildlife from the use of this different method are described below.

*Vegetation*

Under Alternative 3, mechanical release treatments (chainsaws/brushsaws) would be performed to remove much of the above-ground portion of midstory species, as well as competing vegetation, within the project area. Unlike herbicide treatments, midstory vegetation and noxious weeds would not likely be killed as a result of mechanical treatments, at least initially. As a result, several mechanical release treatments would be required to eliminate these species due to the continual re-growth of selectively cut vegetation. More than one mechanical treatment in the same growing season may be required in some cases, and numerous mechanical treatments would likely be required in each stand over the next four to five years, especially in areas that contain invasive species, such as kudzu, wisteria, and tree-of-heaven. While short-term impacts on vegetation (midstory vegetation and noxious weeds) within the project area would be slightly different under Alternative 3 than under Alternative 2, long-term impacts on vegetation would be the same as those described under Alternative 2 above, assuming repeated mechanical treatments occur.

*General Wildlife*

Under Alternative 3, mechanical treatments for midstory and noxious weed control would have a greater potential to temporarily affect wildlife in the project area due to noise generated from handheld equipment. Equipment would be used for a longer period of time under Alternative 3 than under Alternative 2, since all selected vegetation would be removed mechanically. In addition, the use of mechanical methods would require two to three treatments over a three- to five-year period, resulting in repeated noise disturbances within and around each affected stand. However, noise-generating equipment would only be used for a very short duration in any given area during any given season. All displaced wildlife would be expected to return to the areas upon completion of management activities, and no long-term impacts on wildlife are anticipated to result from noise disturbance during activities. In addition, there would be undisturbed pine and hardwoods stands in the immediate vicinity of project area for the displaced wildlife during management activities.

The primary difference between short-term impacts on wildlife habitat under Alternatives 3 and 2 is that, under Alternative 3, there would be a larger amount of downed vegetation within the project area immediately following the mechanical treatments. This downed vegetation would provide habitat for small mammals, reptiles, and amphibians until such vegetation decomposes. In addition, areas treated mechanically recover faster due to sprouting of severed stems, and vegetative re-sprouts provide a more palatable source of food to insects and wildlife. Since the

entire area proposed for midstory control would be treated mechanically under Alternative 3, there may be a small increase the amount and diversity of wildlife within the treatment areas shortly following treatments due to more re-sprouting.

While short-term impacts on wildlife within the project area would be slightly different under Alternative 3 than under Alternative 2, long-term impacts on wildlife would be the same as those described under Alternative 2 above, assuming repeated mechanical treatments occur to control midstory and noxious weeds.

*Management Indicator Species*

Impacts on MIS under Alternative 3 would be very similar to those resulting from Alternative 2. Refer to the discussion under Alternative 2 for these impacts. The primary difference between Alternatives 2 and 3 is that Alternative 3 may provide more enhanced habitat for the white-tailed deer over the short-term from vegetative re-sprouting resulting from mechanical methods. In addition, the use of mechanical methods would take a longer amount of time to make the project area optimal for the pine warbler, since several treatments would be necessary to control midstory vegetation, including hardwood species.

*Locally Rare Species*

Since no locally rare plants are known from the project area, implementation of Alternative 3 would not have any effect on these species. Although the four-toed salamander is known to inhabit swamps, boggy streams and ponds, and wet woods within or adjacent to the project area, Alternative 3 would not affect these areas (due to riparian corridor restrictions). Therefore, no effects on locally rare animal species or their habitat would occur as a result of Alternative 3.

*Proposed, Endangered, Threatened, and Sensitive (PETS) Species*

Impacts on PETS species under Alternative 3 would be the same as those resulting from Alternative 2. Refer to the discussion under Alternative 2 for these impacts. However, slightly more disturbance may be necessary under Alternative 3 to control midstory vegetation, since mechanical methods are somewhat less effective at vegetation control than herbicides.

**Alternative 4 (RCW Habitat Restoration on a Smaller Land Area)**

Impacts on forest vegetation and wildlife under Alternative 4 would be very similar to those resulting from Alternative 2. Refer to the discussion under Alternative 2 for these impacts. The primary difference is that the extent of beneficial and adverse impacts on vegetation and wildlife under Alternative 4 would be somewhat less than those under Alternative 2, due to a smaller area proposed for thinning and midstory control, and a subsequently smaller number of roads that would need to be reopened/rehabilitated. A smaller amount of pine forest would be opened up under this alternative, and a smaller amount of early successional habitat created.

*Management Indicator Species*

Impacts on MIS under Alternative 4 would be similar to those resulting from Alternative 2. Refer to Alternative 2 above for a discussion of these impacts. Specific differences between the effects of Alternatives 2 and 4 on MIS and their habitat are described below.

While Alternative 4 would enhance and/or create a smaller amount of suitable habitat for the RCW than Alternative 2 or 3, no adverse impacts on the species or its habitat would be anticipated. Recruitment stands, although fewer in number, would still be established, and RCW inserts would still be placed within the project area for the species. In addition, midstory control would still occur under this alternative to improve foraging conditions for the RCW; however, this would occur on a smaller acreage.

Habitat within or adjacent to riparian areas would be more protected under Alternative 4, since many of the areas that would be dropped from consideration for vegetation management activities are partially located within or adjacent to riparian habitats. Therefore, Alternative 4 would have less of a potential to adversely affect habitat for the Acadian flycatcher and Swainson's warbler within the project area.

Since less pine forested habitat would be opened up under Alternative 4, effects on pine warbler habitat, although still beneficial, would be less than those described under Alternatives 2 and 3 above. Less habitat would be created and/or improved for this species under Alternative 4; however, habitat would improve over existing conditions within the project area.

In addition, a slightly smaller amount of habitat would be created within the project area for the prairie warbler and white-tailed deer under Alternative 4, since three fewer wildlife openings would be created in Compartment 117 under this alternative and less temporary road reopening/ reconstruction would occur. While a smaller amount of early successional habitat/browse would be created under this alternative, habitat for both of these species within the project area would still be improved over existing conditions.

*Locally Rare Species*

Since no locally rare plants are known from the project area, implementation of Alternative 4 would not have any effect on these species. Although the four-toed salamander is known to inhabit swamps, boggy streams and ponds, and wet woods within or adjacent to the project area, Alternative 4 would not affect these areas (due to riparian corridor restrictions). Therefore, no effects on locally rare animal species or their habitat would occur as a result of Alternative 4.

*Proposed, Endangered, Threatened, and Sensitive (PETS) Species*

Impacts on PETS species under Alternative 4 would be similar to those resulting from Alternative 2. Refer to the discussion under Alternative 2 for these impacts. However, a smaller amount of habitat for the RCW and Bachman's sparrow would be improved under this alternative, and therefore, implementation of Alternative 4 would be less beneficial for these species than Alternatives 2 or 3.

### *3.2.1.3 Cumulative Impacts*

**Alternative 1**

In the absence of thinning under Alternative 1, the general health of forest stands in the project area would likely decline gradually and stabilize at a new lower level. The incidence of SPB attacks would likely increase, and the potential for infected trees to spread the beetle to nearby trees on public and private lands would also increase. However, SPB suppression efforts have been conducted within the project area, and would continue to be conducted in the future. Since these activities are working to decrease adverse impacts associated with SPB, Alternative 1 would not result in significant cumulative increase in outbreaks in the project area. However, Alternative 1 may result in increased necessity for SPB suppression/salvage activities to occur.

Alternative 1, however, may cumulatively result in an increase in the potential for a catastrophic wildfire within the project area. An increase in hazardous fuel loading is already occurring due to SPB outbreaks, where mature trees are either dying or being cut and left on the ground in suppression efforts. Although prescribed burning is working to reduce these hazardous fuels, and thus the potential for a catastrophic wildfire, overstocking of the forest stand would increase under Alternative 1, contributing to an increase in the potential for wildfire.

Implementation of Alternative 1 would neither provide open forest habitat, nor create a measurable amount of additional early successional habitat. Early successional habitat would only be created in the event of pine mortality. Prescribed burning within the project area would enhance the quality of this early successional habitat. However, these impacts would be short-term, as the surrounding forest canopy would quickly close over the openings.

Under Alternative 1, forest stands within the project area would continue to mature, shading out understory vegetation and reducing the quantity of browse for various wildlife species. Prescribed fires in these areas would help to improve foraging habitat for wildlife by increasing browse production. In addition, prescribed fires in these areas would help delay succession of the forest stands to hardwoods, which have lower resistance to fires (Yahner, 2000). Although biodiversity would increase in the understory as a result of periodic prescribed burn treatments in some stands, this increase would be very slight, since the closed canopy would prevent sunlight from reaching the forest floor. Diversity in the canopy and subcanopy would likely remain at current levels under Alternative 1.

Over the longer-term, early successional habitat may be provided on recently cleared areas and in agricultural fields on private land. Depending on activities of the landowners, this type of habitat may be continually provided over the long-term if timber harvest continues on these lands in short-rotation. Lands converted to cultivated uses would provide field and edge habitat over the long-term. In areas where this private land is located adjacent to mature forested habitat, edge habitat would be created. Therefore, when combined with activities on private lands, the No Action alternative may still allow for a mosaic of habitats that would benefit a variety of different species, although open forest habitats would decline.

**Alternatives 2, 3, and 4**

Prescribed burning has been occurring within the project area over the past couple of decades, and would continue to occur in the future. The combined use of thinning and prescribed burns is considered optimal for maintaining an abundant source of understory vegetation for wildlife browse (Cain, 1995; Haywood et al., 1998; Schultz, 1997; USDA, 1989b). Periodic prescribed burning generally topkills most small, developing hardwood sprouts and shrubs (USDA, 1989a; 1989b; Schultz, 1997). This stimulates the growth of multiple sprouts from surviving root stocks and maintains the majority of hardwood sprouts in an optimal state for wildlife forage and cover. Yield and quality increases are often observed in herbage, legumes, and hardwood sprouts following a fire, and when combined with thinning operations that increase light penetration to the forest floor, increases would be noticeable. Further discussion of the benefits to vegetation communities associated with prescribed fire use are covered in the *Vegetation Management in the Coastal Plain/Piedmont EI*S (USFS, 1989a), and in the *Guide for Prescribed Fire in the Southern United States* (USFS, 1989b).

Low intensity prescribed fires conducted by the USFS rarely cause direct wildlife mortality, and any mortality typically has a negligible effect on wildlife populations (USFS, 1989a; Lyon et al., 2000; Landers, 1987). Impacts on wildlife from prescribed burning are primarily indirect, through effects on habitat and food sources. Prescribed fire can have temporary adverse impacts on animal populations by eliminating cover, food sources, habitat, or destroying nesting sites (Lyon et al., 2000; Schultz, 1997). However, fire can cause a short-term increase in productivity, availability, or nutrient content of forage and browse, as well as stimulate fruit and seed production (USFS, 1989a; 1989b; Schultz, 1997; Lyon et al., 2000). These improvements may, in turn, contribute to an increase in herbivore populations, and subsequently, an increase in their predators. Large carnivores and omnivores have extensive home ranges and their populations may change little in response to fire; however, they thrive where their preferred prey is most plentiful, often in areas of recent burns (Lyon et al., 2000). Prescribed fire also temporarily opens up the understory, benefiting those species that prefer more open areas for foraging, escape, and nesting, but adversely affecting other species that require protection of dense understory growth (Landers, 1987). Prescribed fires can also increase edge effects and create habitat mosaics that contain semi-open and open conditions (USFS, 1989b).

Cumulative effects on wildlife resulting from the combination of prescribed burning and thinning would be beneficial. There would be a greater increase in the production of herbaceous food sources within the project area, which would likely increase wildlife populations in the area.

Prescribed burning, in combination with thinning, would help to create a more mosaic forest structure, thereby increasing plant and animal species diversity. This mosaic of habitat types would be enhanced by the diversity of cover on adjacent public (deciduous and mixed forest) and private lands (forested land and fields), and by the creation and maintenance of wildlife openings under Alternatives 2, 3, and 4. Wildlife openings favor wildlife that prefer open areas, early successional, or shrub habitat, while mature forested conditions favor forest interior species. Therefore, habitat types that would be created and/or present within and adjacent to the project area would include early successional habitat, edge habitat, open land (small amounts), mature forested habitat, and open forest habitats. When considered in a cumulative context,

implementation of Alternative 2, 3, or 4 would provide a wide array of habitat types for a variety of wildlife, including wildlife MIS, over the long-term. The amounts of these habitat types would vary somewhat by alternative, particularly the amount of open forested and early successional habitat, which would be smaller under Alternative 4 due to a smaller area of activity.

Implementation of Alternative 2, 3, or 4, in conjunction with prescribed burning, would also decrease the potential for a catastrophic fire or SPB outbreak to occur. Thinning would increase forest health and reduce crowded conditions, while burning would eliminate grounded fuels from the area, cumulatively benefiting the forest stand.

*Management Indicator Species*

Since Alternatives 1, 2, 3, and 4 would have no effects, or only minimal effects, on habitat for the Acadian flycatcher, pileated woodpecker, hooded warbler, field sparrow, and scarlet tanager, these alternatives would not contribute to cumulative impacts on these species.

All Forest actions are monitored as to their effects on MIS. The potential for pine mortality (either natural or from SPB infestations) would be greater under Alternative 1 due to poor forest health and overcrowded conditions. Temporary habitat (openings, early successional areas) would be created for prairie warbler and white-tailed deer in the event of pine mortality under Alternative 1. SPB suppression and salvage cuts occurring in the area would increase the possibility for openings to be created. In addition, prescribed burning would enhance the quality of the early successional habitat created by these openings. These cumulative impacts would be short-term, however, only lasting until the forest canopy closes.

Thinning in combination with prescribed burning under Alternatives 2, 3, and 4 would benefit the RCW, white-tailed deer, and pine warbler within the project area more than thinning or prescribed burning alone. The creation and maintenance (through prescribed fire) of wildlife openings within the project area would also provide additional habitat for these species, as well as for the prairie warbler. Therefore, a beneficial cumulative impact on these species would occur as a result of Alternatives 2, 3, and to a lesser extent, 4.

Prescribed burning provides the foundation for the restoration and maintenance of the pine ecosystem upon with the RCW and many other species depend. Burning, when used effectively, has been noted to be the most efficient and “natural” way to maintain RCW habitat (nesting and foraging) in optimal condition (USFS, 2003a). Burning would reduce the midstory within the forest stands, while thinning would open up the canopy, creating open, park-like conditions preferred by the RCW.

*Locally Rare Species*

Since none of the alternatives would have any effects on locally rare plant or animal species or their habitats, implementation of any of the alternatives would not contribute to cumulative impacts on locally rare species.

*Proposed, Endangered, Threatened, and Sensitive (PETS) Species*

Since none of the alternatives would have any effect on the Oglethorpe oak, implementation of any of the alternatives would not contribute to cumulative impacts on this species.

All Forest actions are monitored as to their effects on PETS species. The potential for pine mortality (either natural or from SPB infestations) would be greater under Alternative 1 due to poor forest health and overcrowded conditions. There would be a greater potential under Alternative 1 for SPB infestations to adversely affect RCW and Bachman's sparrow habitat. While prescribed burning would slightly enhance the quality of habitat within the project area for these species, Alternative 1 would not contribute to these beneficial effects.

Thinning in combination with prescribed burning under Alternatives 2, 3, and 4 would benefit the RCW and Bachman's sparrow within the project area more than thinning or prescribed burning alone. Therefore, a beneficial cumulative impact on these species would occur as a result of Alternatives 2, 3, and to a lesser extent, 4. Intervals of prescribed fire on a 2- to 5-year basis and midstory control (mechanical and chemical) would promote the optimal habitat requirements needed for the species. Prescribed burning would be implemented during the growing season when parameters can be met (Caldwell, 2004). Prescribed burning provides the foundation for the restoration and maintenance of the pine ecosystem upon with the RCW and many other species depend. Burning, when used effectively, has been noted to be the most efficient and "natural" way to maintain RCW habitat (nesting and foraging) in optimal condition (USFS, 2003a). Burning would reduce the midstory within the forest stands, while thinning would open up the canopy, creating open, park-like conditions preferred by the RCW.

In addition, the removal or cutting of dense trees would result in an additional beneficial cumulative effect by stopping the spread of SPB infestations and minimizing loss of habitat.

# 4.0 CONSULTATION AND COORDINATION

Consultation and coordination have occurred with numerous agencies during the preparation of this EA. **Table 4-1** lists the agencies, organizations, and persons contacted for information, which assisted in identifying issues, developing alternatives, and analyzing impacts of the alternatives.

**Table 4-1. Persons and Agencies Contacted**

| Person Contacted | Agency/Organization |
|---|---|
| William Nightingale, District Ranger | U.S. Forest Service, Chattahoochee-Oconee National Forests, Oconee Ranger District |
| Elizabeth Caldwell, Wildlife Biologist | U.S. Forest Service, Chattahoochee-Oconee National Forests, Oconee Ranger District |
| Christy Smith, Procurement and Property | U.S. Forest Service, Chattahoochee-Oconee National Forests |
| John Petrick, Forest Planner | U.S. Forest Service, Chattahoochee-Oconee National Forests |
| Timothy Walker, Forester | U.S. Forest Service, Chattahoochee-Oconee National Forests |
| Tony Wild, District Fire Management Officer | U.S. Forest Service, Chattahoochee-Oconee National Forests, Oconee Ranger District |
| Melissa Anderson, Engineering Technician | U.S. Forest Service, Chattahoochee-Oconee National Forests |
| Michael Hurst, Wildlife Biologist | U.S. Forest Service, Chattahoochee-Oconee National Forests |
| Sarah Melville | U.S. Forest Service, Chattahoochee-Oconee National Forests, Oconee Ranger District |
| Ray Ellis, Natural Resources Staff Officer | U.S. Forest Service, Chattahoochee-Oconee National Forests |
| James Rickard | U.S. Fish and Wildlife Service, Georgia Ecological Services |
| W. Ray Luce, Division Director, Deputy State Historic Preservation Officer | Georgia Department of Natural Resources, Historic Preservation Division |
| Serena Bellow, Environmental Review Coordinator | Georgia Department of Natural Resources, Historic Preservation Division |
| Katherine Groves, Staff Ecologist | Georgia Forestwatch |

# 5.0 REFERENCES CITED

(Baker and Hunter, 2002). Baker, James C. and William C. Hunter. 05 October 2002. Chapter 4: Effects of Forest Management on Terrestrial Ecosystems. In: *Southern Forest Resource Assessment, Final Report*, United States Department of Agriculture, Forest Service, Southern Region and Southern Research Station, in collaboration with the United Sates Environmental Protection Agency, United Sates Fish and Wildlife Service, Tennessee Valley Authority, and State forestry agencies of the Southern United States.

(Belanger et al., 2000). Belanger, Roger P., Thomas Miller, Stanley J. Zarnoch, Stephen W. Fraedrich, and John F. Godbee. December 2000. An Integrated Approach Toward Reducing Losses From Fusiform Rust in Merchantable Slash and Loblolly Pine Plantations. United States Department of Agriculture, Forest Service, Southern Research Station. Research Paper SRS-23.

(Cain, 1995). Cain, Michael D. 13 June 1995. Growth Expectations from Alternative Thinning Regimes and Prescribed Burning in Naturally Regenerated Loblolly-Shortleaf Pine Stands Through Age 20. United States Department of Agriculture, Forest Service, Southern Research Station, Forestry Services Laboratory, Monticello, Arizona. Reprinted from: *Forest Ecology and Management*, XI (1996), pp. 227-241.

(Caldwell, 2004). Caldwell, Elizabeth. 29 May 2004. Biological Evaluation For Red-Cockaded Woodpecker (*Picoides borealis*) and Bachman Sparrow (*Aimophila estivalis*) Habitat Improvement Project, Compartments 113, 114, 117, 118, and 119. United States Department of Agriculture, Forest Service, Oconee National Forest.

(Cowardin et al., 1979). Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. United States Fish and Wildlife Service Pub. FWS/OBS-79/31, Washington, DC, 103p.

(Ellis, 2003). United States Department of Agriculture, Forest Service, Chattahoochee-Oconee National Forests. 16 July 2003. Personal communication with Ray Ellis, Natural Resource Staff Officer.

(England, 1987). England, R.H. January 1987. Fisheries Management on Georgia National Forests. In: *Managing Southern Forests for Wildlife and Fish, A Proceedings*. United States Department of Agriculture, Forest Service, Southern Forest Experiment Station. General Technical Report SO-65.

(Fulton and West, 2002). Fulton, Stephanie and Ben West. 05 October 2002. Chapter 21: Forestry Impacts on Water Quality. In: *Southern Forest Resource Assessment, Final Report*, United States Department of Agriculture, Forest Service, Southern Region and Southern Research Station, in collaboration with the United Sates Environmental Protection Agency, United Sates Fish and Wildlife Service, Tennessee Valley Authority, and State forestry agencies of the Southern United States.

(GDNR et al., 1999). Georgia Department of Natural Resources, Environmental Protection Division, Georgia Forestry Commission, and Georgia Forestry Association. January 1999. *Georgia's Best Management Practices for Forestry.*

(GDNR, 2001). Georgia Department of Natural Resources, Environmental Protection Division. June 2001. Total Maximum Daily Load for Forty-One Stream Segments in the Ocmulgee River Basin For Sediment. Submitted to the U.S. Environmental Protection Agency, Region 4.

(GDNR, 2003). Georgia Department of Natural Resources, Wildlife Resources Division, Georgia Natural Heritage Program. 11 June 2003. Locations of Special Concern Animals, Plants, and Natural Communities in Jasper County, Georgia, by Quarter Quad Names Starting with (B), and by Quarter Quad Names Starting with (H).

(GDNR, 2004). Georgia Department of Natural Resources , Environmental Protection Division. 09 January 2004. 2004 Rivers/Streams Partially Supporting Designated Uses, Draft.

(Grace et al., 1997). Grace, John M., Bob Rummer, and Bryce J. Stokes. August 1997. Sediment Production and Runoff from Forest Road Sideslopes. Written for presentation at the August 10-14, 1997 ASAE Annual International Meeting. United States Department of Agriculture, Forest Service, Southern Research Station. SRS-4703.

(Gucinski et al., 2001). Gucinski, Hermann, Michael J. Furniss, Robert R. Ziemer, and Martha H. Brookes (Eds.). May 2001. *Forest Roads: A Synthesis of Scientific Information.* United States Department of Agriculture, Forest Service, Pacific Northwest Research Station. Portland, Oregon. General Technical Report PNW-GTR-509.

(Haywood et al., 1998). Haywood, James D. September 1998. Seasonal Burning and Woody Plant Control Influence Native Vegetation in Loblolly Pine Stands. United States Department of Agriculture, Forest Service, Southern Research Station. Research Paper SRS-14.

(Landers, 1987). Landers, J. Larry. January 1987. Prescribed Burning for Managing Wildlife in Southeastern pine Forests. In: *Managing Southern Forests for Wildlife and Fish, A Proceedings*, United States Department of Agriculture, Forest Service, Southern Forest Experiment Station. General Technical Report SO-65.

(Lemly, 2000). Lemly, Dennis L. 2000. Techniques of Fisheries Management: Water Quality Assessment with Stream Insects. Workshop Notes: Silviculture in the Appalachian Mountains Program of Advanced Studies in Silviculture. February 29–March 17, 2000. Virginia Cooperate Extension Service, Virginia Polytechnic Institute and State University, College of Natural Resources. Pgs. 30-31.

(Lyon et al., 2000). Lyon, L. Jack, Mark H. Huff, Robert G. Hooper, Edmund S. Telfer, David S. Schreiner, and Jane K. Smith. January 2000. *Wildland Fire in Ecosystems: Effects of Fire on Fauna*. United States Department of Agriculture, Forest Service, Rocky Mountain Research Station. General Technical Report RMRS-GTR-42-Volume 1.

(Mengak et al., 1988). Mengak, Michael T., David H. Van Lear, and David C. Guynn, Jr. 1988. Impacts of Loblolly Pine Regeneration on Selected Wildlife Habitat Components. In: *Proceedings of the Fifth Biennial Southern Silvicultural Research Conference, Memphis, Tennessee, November 1-3, 1988*. United States Department of Agriculture, Forest Service, Southern Forest Experiment Station, 1989. General Technical Report SO-74. Pgs. 612-618.

(Meyers and Johnson, 1978). Meyers, Joseph M. and A. Sydney Johnson. 1978. Bird Communities Associated with Succession and Management of Loblolly-Shortleaf Pine Forests. In: *Proceedings of the Workshop Management of Southern Forest for Nongame Birds, Atlanta, Georgia, January 24-26, 1978*. United States Department of Agriculture, Forest Service, Southern Forest Experiment Station. General Technical Report SE-1.4. Pgs. 50-65.

(Miller, 1987). Miller, Edwin. January 1987. Effects of Forest Practices on Relationships Between Riparian Area and Aquatic Ecosystems. In: *Managing Southern Forests for Wildlife and Fish, A Proceedings*, United States Department of Agriculture, Forest Service, Southern Forest Experiment Station. General Technical Report SO-65.

(Miller et al., 1995). Miller, James H., Bruce R. Zutter, Shepard M. Zedaker, M. Boyd Edwards, and Ray A. New'hold. August 1995. Early Plant Succession in Loblolly Pine Plantations as Affected by Vegetation Management. Reprinted from: *Southern Journal of Applied Forestry*, Vol. 19, No. 3.

(NatureServe Explorer, 2002). NatureServe Explorer: An online encyclopedia of life [web application]. 2002. Version 1.6. Arlington, Virginia, USA: NatureServe. Accessed on 15 May 2003. Accessed at: http://www.natureserve.org/explorer.

(NRCS, 1999). United States Department of Agriculture, Natural Resources Conservation Service. 1999. *Soil Survey of Jasper County, Georgia*. In cooperation with University of Georgia, College of Agriculture and Environmental Sciences; Agricultural Experiment Stations; United States Forest Service; and United States Fish and Wildlife Service, Piedmont National Wildlife Refuge.

(Perkins et al., 1988). Perkins, Carroll J., George A. Hurst, and E. Randy Roach. 1988. Relative Abundance of Small Mammals in Young Loblolly Pine Plantations. In: *Proceedings of the Fifth Biennial Southern Silvicultural Research Conference, Memphis, Tennessee, November 1-3, 1988.* United States Department of Agriculture, Forest Service, Southern Forest Experiment Station, 1989. General Technical Report SO-74. Pgs. 589-591.

(Schultz, 1997). Schultz, Robert P. 1997. Loblolly Pine: The Ecology and Culture of Loblolly Pine (*Pinus taeda* L.). In: *Agricultural Handbook 713*, United States Department of Agriculture, Forest Service, Washington, D.C. 493 pp.

(Seehorn, 1987). Seehorn, Monte E. January 1987. The Influence of Silvicultural Practices on Fisheries Management: Effects and Mitigation Measures. In: *Managing Southern Forests for*

*Wildlife and Fish, A Proceedings*, United States Department of Agriculture, Forest Service, Southern Forest Experiment Station. General Technical Report SO-65.

(Tank and Webster, 1998). Tank, Jennifer L., and J.R. Webster. I1998. Interaction of Substrate and Nutrient Availability on Wood Biofilm Processes in Streams. *Ecology,* 79(6): 2168-2179.

(USEPA, 2001). United States Environmental Protection Agency, Office of Water, Nonpoint Source Control Branch. February 2001. National Management Measures to Control Nonpoint Source Pollution from Forestry, Draft. Prepared by Tetra Tech, Inc.

(USFS, 1989a). United States Department of Agriculture, Forest Service, Southern Region. January 1989. *Vegetation Management in the Coastal Plain/Piedmont Final Environmental Impact Statement*.

(USFS, 1989b). United States Department of Agriculture, Forest Service, Southern Region. February 1989. *A Guide For Prescribed Fire in Southern Forests.* Technical Publication R8-TP 11.

(USFS, 2001). United States Department of Agriculture, Forest Service, Southern Region, Chattahoochee-Oconee National Forests. November 2001. *Final Environmental Assessment for the Suppression of Southern Pine Beetle within the Red-cockaded Woodpecker Subhabitat Management Area on the Oconee National Forest*.

(USFS, 2002a). United States Department of Agriculture, Forest Service, Region 8, Chattahoochee-Oconee National Forests. File data: 09 September 2002. USDA Forest Service Stewardship Contracting Pilots Monitoring/Evaluation Report, FY 2002. Red Cockaded Woodpecker and Bachman's Sparrow Habitat Improvement.

(USFS, 2002b). United States Department of Agriculture, Forest Service, Chattahoochee-Oconee National Forests. 2002. Chattahoochee-Oconee National Forest 2002 Locally Rare Species List.

(USFS, 2003a). United States Department of Agriculture, Forest Service, Chattahoochee-Oconee National Forests, Oconee Ranger District. 2003. Decision Memo, Prescribed Burning. Issued by William Nightingale, District Ranger.

(USFS, 2003b). United States Department of Agriculture, Forest Service, Southern Region, Chattahoochee-Oconee National Forests. Revised and updated May 2003. *Management Indicator Species Population and Habitat Trends*.

(USFS, 2003c). United States Department of Agriculture, Forest Service, Oconee National Forest. May 2003. Stewardship Project Temporary Road Information. Spreadsheet.

(USFS, 2003d). United States Department of Agriculture, Forest Service, Oconee National Forest. 29 May 2003. Stewardship Project Proposed FS Haul Roads. Transmitted via email from Elizabeth Caldwell, Wildlife Biologist, to Mangi Environmental.

(USFS, 2004a). United States Department of Agriculture, Forest Service, Southern Region, Chattahoochee-Oconee National Forests. January 2004. *Land and Resource Management Plan Chattahoochee-Oconee National Forests.*

(USFS, 2004b). United States Department of Agriculture, Forest Service, Southern Region, Chattahoochee-Oconee National Forests. January 2004. *Final Environmental Impact Statement, Land and Resource Management Plan Chattahoochee-Oconee National Forests.*

(USFWS, 1998). United States Department of Interior, Fish and Wildlife Service, Piedmont National Wildlife Refuge. October 1998. *Piedmont National Wildlife Refuge Fishing Regulations* (brochure).

(USFWS, 2002). United States Department of Interior, Fish and Wildlife Service, Clemson Field Office. October 2002. *Red-cockaded Woodpecker* (brochure).

(USFWS, 2003a). United States Department of Interior, Fish and Wildlife Service, Southeast Region. Approved 27 January 2003. Recovery Plan for the Red-cockaded Woodpecker (Picoides borealis), Second Revision. U.S. Fish and Wildlife Service, Atlanta, Georgia. 296 pp.

(USFWS, 2003b). United States Department of Interior, Fish and Wildlife Service. As of 01 June 2003. National Wetlands Inventory. Accessed at: http://wetlands.fws.gov/.

(Walker, 2003) USDA Forest Service, Oconee National Forest. 2003. E-mail communication from forester Timothy Walker. July 31.

(Webb & Associates, 2003). R.S. Webb & Associates. 26 February 2003. *Archeological Survey of 1,247 Acres in Compartments 113, 114, 118, and 119, Chattahoochee-Oconee National Forests, Oconee District, Jasper County, Georgia.* Prepared by William R. Jordan and Phillip W. Quirk. Prepared for United States Department of Agriculture, Forest Service, Chattahoochee-Oconee National Forests.

(Williams et al., 1999). Williams, Thomas M., Donal D. Hook, Donald J. Lipscomb, Xiaoyan Zeng, and Joseph W. Albiston. February 1999. Effectiveness of Best Management Practices to Protect Water Quality in the South Carolina Piedmont. In: *Proceedings of the Tenth Biennial Southern Silvicultural Research Conference*, Shreveport, Louisiana, February 16-18, 1999. United States Department of Agriculture, Forest Service, Southern Forest Experiment Station, 1999. General Technical Report SRS-30. Pgs. 271-276.

(Wood and Wood, 1985). Wood, K.G. and W. Dean Wood. 1985. A Cultural Resources Reconnaissance Survey of Compartments 116 and 117, Oconee National Forest, Jasper County, Georgia. Southern Archeological Services, Inc. Athens, Georgia.

(Yahner, 2000). Yahner, Richard H. 2000. *Eastern Deciduous Forest Ecology and Wildlife Conservation, Second Edition*. Minneapolis, Minnesota: University of Minnesota Press.

# 6.0 LIST OF PREPARERS

The following people contributed to the preparation of this EA:

| Name | Degree | Experience | Role |
|---|---|---|---|
| **The Mangi Environmental Group, Inc.** | | | |
| Leon Kolankiewicz | M.S. Environmental Planning & Natural Resources Management<br>B.S. Forestry & Wildlife Management | 25 years | Project Manager |
| Robin Olsen | B.A. Biology and Psychology | 5 years | Project Leader;<br>Lead Environmental Analyst |
| Rebecca Whitney | B.S. Geology and Biology | 3 years | Geographic Information Specialist |

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