

**2008 Annual Monitoring and Evaluation Report  
National Forests  
In Florida**



## 2008 MONITORING AND EVALUATION REPORT

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## 2008 ANNUAL MONITORING AND EVALUATION REPORT National Forests in Florida

### Abstract

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

### Certification Statement

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

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

This report is approved:

Carl Petrick for  
SUSAN JEHEBER-MATTHEWS  
Forest Supervisor

09/29/09  
Date

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## Summary

Implementation of the Revised Land and Resource Management Plan for the National Forests in Florida (Forest Plan) began in June 1999. This report documents the results of monitoring how well goals and objectives of the Forest Plan have been met and how closely management standards have been applied in FY 2008 (October 2007-September 2008), the eighth full year of implementation.

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

### Major Findings:

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

#### *Vegetation Management*

Based on the expected annual average of outcomes for the planning period, the vegetation management program through timber harvests needs some follow-up action. The table below summarizes the situation concerning timber harvest objectives and accomplishments through fiscal year 2008.

It is expected that some of the vegetation management objectives cannot be attained under current and anticipated budgets and conflicts with other forest priorities. Priorities need to be established for those treatments that are critical to TE&S habitat restoration and overall forest health.

Detailed discussion can be found under monitoring questions 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, and 2.15.

#### **Cumulative Objectives and Accomplishments, FY 2000-2008**

<b>Clearcutting Sand Pine for Scrub Jay Habitat</b>	
2000-2008 Objective (Acres)	36,000
Accomplishment (Acres)	22,581
<b>Difference (Acres)</b>	<b>-13,419</b>
<b>Thinning Over-stocked Pine Stands</b>	
2000-2008 Objective (Acres)	46,800
Accomplishment (Acres)	14,989
<b>Difference (Acres)</b>	<b>-31,811</b>
<b>Uneven-aged Group Selection Regeneration Harvest</b>	
2000-2008 Objective (Acres)	29,250
Accomplishment (Acres)	3,292
<b>Difference (Acres)</b>	<b>-25,958</b>
<b>Irregular Shelterwood Regeneration Harvest</b>	
2000-2008 Objective (Acres)	1,692

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Accomplishment (Acres)	0
<b>Difference (Acres)</b>	<b>-1,692</b>
<b>Longleaf Restoration removing off-site slash pine</b>	
2000-2008 Objective (Acres)	10,620
Accomplishment (Acres)	5,335
<b>Difference (Acres)</b>	<b>-5,285</b>
<b>Removing Slash Pine from Longleaf Stands</b>	
2000-2008 Objective (Acres)	7,200
Accomplishment (Acres)	1,298
<b>Difference (Acres)</b>	<b>-5,902</b>
<b>Allowable Sale Quantity</b>	
2000-2008 Objective (Million Cubic Feet)	92.7
Accomplishment (Million Cubic Feet)	59.3
<b>Difference (Million Cubic Feet)</b>	<b>-33.4</b>

*Prescribed Burning and Integrated Fuels Management*

Based on the upland pine Management Area 7.1 of 504,583 acres, 84% of this type was burned in the last 3 years (2006, 2007, 2008). In FY 2008, 177,269 acres were burned which is above the average objective of 168,000 acres. Of the FY 2008 acres, 49% of these acres were burned in the winter months (October to February) and 51% of the acres were burned in the summer months (March to September). Of those summer burns, 21% of the acres were burned between May 1 and July 31. The months of April, May and June again experienced drought conditions.

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

There is a need to treat more acres mechanically to enhance burning opportunities on the Osceola National Forest in areas with high fuel concentrations. This can be accomplished through the use of specialized equipment to create defensible fire lines especially near private property. In addition, a greater emphasis on integrated fuels treatment is called for. An example is the use of utilizing woody biomass to achieve Forest Plan objectives.

Detailed discussion can be found under monitoring questions 1.8.

*Management Indicator and Proposed, Endangered, Threatened and Sensitive Species*

Management Indicator Species (MIS) are selected during Forest Planning to indicate effects of management activities. In general, most populations of MIS for which we have adequate monitoring data are either stable or increasing. Two exceptions to this are the northern bobwhite quail and the sand skink. In the case of the bobwhite, population decline is a problem throughout the southeast related to the loss of grassland ecosystems. The Upland Ecosystem Restoration Project; a multi-agency partnership is working to restore these ecosystems. In the case of the sand skink, the difficulty of monitoring the species keeps us from accurately assessing the health of the population. Our best course of action is to protect all known and potential habitat, which is what we attempt to do.

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All Monitoring Reports since 2001 have indicated that there was a need to re-evaluate the list of MIS. Some of the current MIS are difficult to monitor and may have limited utility to indicate effects of management activities. With limited funds and personnel available for monitoring, the Forest needs to be able to develop a cause and effect relationship between major management activities and species that can be efficiently monitored. This is an inherent problem with MIS. The forest is pursuing use of an ecological condition model to better evaluate our management impacts. Because of delays in the revised Planning Rule, the Forest should renew efforts to re-evaluate the list of MIS.

Proposed, Endangered and Threatened (PET) species are listed by the US Fish and Wildlife Service. The Endangered Species Act requires us to consider the impacts of all federal actions on these species, and to conserve all populations to the extent possible. Sensitive (S) species are designated by the Forest Service, and receive this designation because of their local and/or global rarity. They receive additional consideration during all Forest Service actions, and we are committed to maintaining viable populations of all these species. This monitoring report shows that all PETS species for which we, or a partner organization, are capable of collecting population or occurrence data continue to maintain viable populations.

Detailed discussion can be found under monitoring questions 1.1, 1.2, 1.3, 1.5, and 1.6.

### *Route Designation Process*

During 2008, the Ocala National Forest implemented designating routes in the rest of the forest (the sand pine scrub). The Apalachicola National Forest also completed on-the-ground implementation of OHV routes in 2008. Preliminary monitoring of areas previously designated on the Ocala and Osceola National Forests indicate generally good compliance. Photo points were established for Phase 2 OHV routes on the Ocala and Apalachicola.

Detailed discussion can be found under monitoring question 2.9.

### *Wilderness and Wild and Scenic Rivers*

Recommendations for the four rivers studied in the Revised Forest Plan, as well as the recommendation for Clear Lake Wilderness Study Area to be designated as wilderness, were not carried forward in FY2008. Florida's congressional delegation has not expressed interest in carrying forward these recommendations.

Detailed discussion can be found under monitoring questions 2.6 and 2.7.

## Introduction

Monitoring is the quality control mechanism for the Forest Plan. Monitoring elements covered in this report are listed in Chapter 5 of the Forest Plan. The report contains results and findings structured under three major headings: (I) Ecosystem Condition, Health, and Sustainability; (II) Sustainable Multiple Forest and Range Benefits; and (III) Organizational Effectiveness. Under each of these headings, Forest Plan goals, objectives, or standards and guidelines that apply are listed along with the monitoring questions, items to measures, and results.

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

# Detailed Monitoring and Evaluation Results and Findings

## *Ecosystem Condition, Health, and Sustainability*

### Forest Plan Goals:

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

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

**Item to Measure: Management indicators** (Refer to Tables 5-2 and 5.3 in Forest Plan)

### **Plants**

#### **INTRODUCTION**

The monitoring strategy in the Forest Plan prescribes that this item be reported on a five-year frequency to discern significant trends in Management Indicator Species (MIS) response to forest management activities. The following report is divided into two primary sections: *T&E Species Accounts* and *Other MIS Species Accounts*.

#### **T&E Species**

In 2007, plant monitoring efforts were revised to increase focus on the eight federally threatened and endangered plant species on the Apalachicola and Ocala National, some of which had been previously selected to be MIS. Reasons for the change partly include an upcoming Planning Rule revision that is anticipated to eliminate the use of MIS. It is also felt that monitoring to ensure health of the T&E groundcover species does achieve objectives to ensure overall health of native plant communities, and that monitoring of T&E plant species is inherently a higher priority than monitoring widespread relatively common species. Each of the T&E species are components of fire-dependent groundcover that are negatively impacted by insufficient application of prescribed

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fire, shading associated with overly dense midstory or overstory, and heavy mechanical disturbances such as that caused by inattentive use of logging equipment.

### **Other MIS Species**

This report includes discussions of seven other plant species that are widespread and common, occurring over a large portion of the ~1.2 million acres in the three National Forest in Florida. Direct monitoring of these species was not undertaken in 2008. With one exception (sand live oak), they are components of fire-dependent groundcover that are negatively impacted by insufficient application of prescribed fire, shading associated with overly dense midstory or overstory, and heavy mechanical disturbances such as that caused by inattentive use of logging equipment. It is felt that monitoring the progress in the prescribed fire program and ongoing efforts to thin pine forests is a fundamental means to ensuring health of these MIS and the forest in general.

### **T&E Species Accounts**

This is the second year of use of a monitoring protocol developed in 2007 by the staff of the USFS, the Florida Natural Areas Inventory (FNAI), and The Nature Conservancy for the eight federally threatened and endangered species noted in Table 1. The protocol was intended to provide the USFS with an efficient method of tracking the presence, status, and population trends of these species – and to gauge effects of management actions on them. Use of the methods in 2008 has shown that further refinement may be needed. Much of the protocol is based on tracking “Element Occurrences” (EOs), mapped populations that are typically at least 1 km apart. However, EOs for the eight USFS species in the FNAI database need to be updated to meet the 1 km standard (i.e., some observations closer than 1 km need to be combined), and monitoring methods of the USFS species updated accordingly.

Table 1 on the following page summarizes the USFWS listing categories, FNAI Global and State ranks, the forest each species occurs on, whether or not monitoring to date indicates the species' populations are secure on each forest, and major management challenges indicated by monitoring efforts.

The 2007 monitoring protocol for each of the T&E species is provided under the Species Accounts below. The monitoring of species occurrences is conducted to determine the impacts of management treatments (e.g. prescribed fire or timber harvest) and is typically conducted only after a management treatment occurs within an area where T&E species are known to occur. Treatments occur periodically, typically 2-3 years at the most frequent, and monitoring should be conducted at the same frequency. Also, most of the species' population sizes are finely tuned to time-since fire, with most populations and individuals being most robust (and apparent) the growing season following fire and tapering off in successive years. For these reasons, it may take 6-10 years or more to assess population trends at any given location.

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**Table1. Target T&E species**

<b>Species Names</b>	<b>USFWS Listing/ FNAI Rank</b>	<b>Location by Forest</b>	<b>Species Secure on Forest?</b>	<b>Major Challenges Indicated by Monitoring</b>
<b>Florida bonamia</b> ( <i>Bonamia grandiflora</i> )	Threatened/ G3/S3	ONF	Yes	It is unclear if the current management method of not burning post harvest slash and other fuels in some stands can maintain bonamia within stand interiors in the long-term.
<b>scrub buckwheat</b> ( <i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i> )	Threatened/ G4T3/S3	ONF	Unknown	The species appears to be absent from many old records. It is unclear if current methods of sand pine regeneration will allow for maintenance of this species in all previously known sites.
<b>Harper's beauty</b> ( <i>Harperocallis flava</i> )	Endangered/ G1/S1	ANF	Yes	Based on available data, total ANF population is ~900-2,500 individuals, with as much as 10% in ROW of public highway. Ecology/habitat needs not well understood. Much apparently suitable habitat not occupied. Much loss of habitat due to encroachment by woody species, with potential reduced population and distribution over historic levels.
<b>white-birds-in-a-nest</b> ( <i>Macbridea alba</i> )	Threatened/ G2/S2	ANF	Yes	Preliminary indications are that this species may be more sensitive to direct impacts of logging equipment (e.g. compared to Florida skullcap).
<b>Britton's beargrass</b> ( <i>Nolina brittoniana</i> )	Endangered/ G2/S2	ONF	No	Known population is very small (as few as 6 individuals). Known site needs more frequent fire. Augmentation of the population may be warranted.
<b>Godfrey's butterwort</b> ( <i>Pinguicula ionantha</i> )	Threatened/ G2/S2	ANF	Yes	There has been extensive loss of suitable habitat due to encroachment by woody species, indicating potential reduced population size compared to historic levels.
<b>Lewton's milkwort</b> ( <i>Polygala lewtonii</i> )	Endangered/ G3/S3	ONF	Yes & No	Sites in scrub off of Hugh's Island appear to be declining, with the species absent from 10 of 18 sites in 2007. If to rebound, scrub sites must be managed at an earlier successional stage.
<b>Florida skullcap</b> ( <i>Scutellaria floridana</i> )	Endangered/ G1/S1	ANF	Yes	Much area where the species occurs was planted to slash pine in past. Efforts to substantially thin or clearcut such plantations during operable periods should continue.

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### Apalachicola National Forest (ANF)

Forest staff monitored previously recorded sites and surveyed for unrecorded sites of Harper's beauty (*Harperocallis flava*), white birds-in-a-nest (*Macbridea alba*), Godfrey's butterwort (*Pinguicula ionantha*), and Florida skullcap (*Scutellaria floridana*) in the spring and summer of 2008. Eleven compartments were systematically surveyed to update known rare plant occurrence records, identify potential habitat and, specifically, to locate new occurrences. Eight stands in three separate timber sales (Smokehouse, Rock Pond, and Hunt) were monitored pre- and post harvest to ascertain impacts on rare plants.

All data was later entered either as a modification to existing data for previously recorded sites or as new observations in cases where new subpopulations were found. Isolated individuals were represented as points; larger clusters as polygons based on GPS data points taken in the field. Data collected on all extant rare plant populations included location, condition, size, and habitat characteristics.

### Ocala National Forest (ONF)

Forest staff monitored existing populations and surveyed for new populations of Florida bonamia (*Bonamia grandiflora*), Scrub Buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*), Britton's beargrass (*Nolina brittoniana*), and Lewton's milkwort (*Polygala lewtonii*) during 2008.

The eight T&E plant species are discussed below in alphabetical order, by scientific name. Results of monitoring and a section on and Evaluations and Recommendations are provided at the end of each of the species discussion.

### Florida Bonamia (*Bonamia grandiflora*), Ocala National Forest

Florida bonamia is endemic to scrub and sandhill ridges of the central Florida peninsula. The FNAI rank for Florida bonamia is G3/S3, meaning this species is rare, restricted or otherwise vulnerable to extinction within its range. The U.S. Fish and Wildlife Service (USFWS) lists Florida bonamia as threatened. This species is found throughout the Lake Wales Ridge, but is most abundant in the ONF where it occurs in 93 stands. On the ONF, the species grows in scrub community composed of evergreen shrubs, with or without a canopy of pines and is also found on dry, infertile, sandy ridges. In ONF, it often grows in openings between the scrub oaks and sand pines, or at the edges of stands along forest roads and trails. In at least one location, it is found at the edge of a sandhill community.

Table 2. Methodology designed for monitoring of Florida bonamia.

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Quantitative Objective 1: Frequency of Florida bonamia on stand edges does not decrease >20% from 2006 levels within appropriate habitat at ONF.

Monitoring methods: Annually survey (by vehicle or on foot) the edges of 100 stands within appropriate habitat recording presence/absence of *Bonamia*. The 100 stands should be randomly chosen each year.

Quantitative Objective 2: Determine whether distance from ORV use roads negatively affects *Bonamia* density and whether it recovers when roads are closed.

Monitoring methods: Follow the survival of selected and marked plants on the edges of ORV roads (open and closed roads) paired with plants nearby in interior habitat. In total 100 plants will be followed (5 roads X 2 road types X 5 replicates/road X 2 paired plants). Each plant will be permanently GPS'd with a GPS whose accuracy is less than 1 m to ensure return to the same plant. Interior plants could be flagged if not visible from the road; plants on roads should not be flagged. Annually each plant will be visited and survival recorded. Additionally, a 2 m X 10 m belt transect will be established centered on the focal plant and recruitment will be evaluated within. The number of seedlings recruited within the belt transect is recorded. Interior plants need to be at least 10 m from the road into natural vegetation (but can and likely will be found in gap openings).

**Results**

All stands were selected randomly within the area where bonamia is known to occur, and all stands were considered potential habitat. Stands included were at different successional stages and differed in habitat quality. Stands where adult bonamia individuals were absent were characterized by a heavy canopy and a dense mid-story oak component. Shading may explain the species' apparent absence from these stands. Bonamia was observed in older stands where the canopy was not completely closed and the oak mid-story component was absent or nearly absent. Bonamia seemed to thrive at stand edges where other native groundcover components were present. Examples of this can be found along Forest Service Road 9.

**Table 3. Results of 2008 monitoring for Florida bonamia**

<b>Bonamia Quantitative Objective 1</b>	<b>Results</b>
# Scrub compartment edges surveyed	50
# compartement edges where species present	30
# compartement edges where species absent	20
<b>Bonamia Quantitative Objective 2</b>	Phase II of trail system was not finished at the time of 2008 surveys. Obj 2 to first be implemented in 2009.

**Evaluation and Recommendations**

Monitoring data from 2008 and previous years indicate that bonamia is widespread and appears to be secure on the forest. Results indicate that adult/vegetative bonamia plants do not thrive under a dense midstory. Conversely, individuals of bonamia are frequently observed in relatively higher abundance where there is more light - at stand edges and where the midstory has been removed. 2007 data indicated that clearcut stands with unburned logging slash appeared to have fewer bonamia seedlings than stands where slash had been burned. In such areas, the soil seed bank of this species is probably not being replenished at the rate in stands where slash has been burned. Although bonamia is currently secure on the forest, it is unclear whether management regimes that do not follow sand pine harvest with fire are optimal for long-term maintenance of this species within stand interiors.

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Whenever feasible, logging slash should be burned in stands known to support bonamia. The 2007 monitoring protocol for this species may need to be revised to more directly assess results of management treatments, canopy/ mid-story conditions, and population size.

**Scrub Buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*), Ocala National Forest**

A central Florida endemic, scrub buckwheat occupies sandhill and yellow-sand scrub habitat. FNAI ranks scrub buckwheat as G4T3/S3, meaning the species is apparently secure within its global range. This particular subspecies is rare, restricted or otherwise vulnerable to extinction across its global and state ranges. The USFWS lists scrub buckwheat as threatened. FNAI's database contains 92 records of occurrences in eight counties. The USFS has documented this plant in 54 stands.

Scrub buckwheat occurs on yellow sand scrub, a community composed of evergreen shrubs and scrub hickory (*Carya floridana*) and is also found on dry, infertile, sandy ridges.

**Table 4. Methodology designed for monitoring scrub buckwheat.**

<p><u>Quantitative Objective 1:</u> The number of populations (EOs) of scrub buckwheat across ONF remains within 80% of known locations until 2020.</p> <p><u>Monitoring methods:</u> Visit 20% of populations each year and document presence/absence. Each population should be visited every fifth year.</p> <p><u>Quantitative Objective 2:</u> A change in the number of flowering stems of &gt; 50% will trigger a closer look unless that change is an increase one year post-fire.</p> <p><u>Monitoring methods:</u> At each population visited in a given year under Objective 1, a count of the number of flowering stems observed should be made.</p>
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**Results**

Monitoring of seven EOs indicated that scrub buckwheat was absent from one. The number of flowering stems in the EOs was not collected in 2008.

**Table 5. Results of 2008 monitoring for scrub buckwheat**

<b>Scrub Buckwheat Quantitative Objective 1</b>	<b>Results</b>
Total # EOs on forest	20
# EOs where sp present (7 monitored in 2008)	6
# EOs where sp absent (7 monitored in 2008)	1
<b>Scrub Buckwheat Quantitative Objective 2</b>	
# flowering stems at EOs where sp present	not collected in 2008
# EOs visited where # flowering stems decreased >50% over previous obs	n/a in 2008
Number of EOs visited where # flowering stems decreased <50% over previous obs	n/a in 2008

**Evaluation and Recommendations**

Monitoring data from 2008 and previous years indicate that scrub buckwheat appears to have declined on the forest, although the health of the seed bank is unknown. The species is limited to small populations and is apparently absent from many previously recorded locations. The more robust populations of this species generally occur in open, sunny habitat. In scrub, numbers of observable mature plants decline as time since treatment (sand pine harvest and/or fire)

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increases. It is generally observed along stand edges and in recent clearcuts, with individuals occasionally persisting under mature sand pine. In 2007, population sizes for scrub buckwheat ranged from one individual to about 100, generally occurring as clusters of several plants in close proximity.

To improve understanding of management actions on this species, populations of scrub buckwheat not relocated in 2007 and 2008 should be resurveyed after actions (i.e., sand pine harvest and/or fire) are taken. Status, habitat conditions, and management for this species should be evaluated after all populations have been monitored.

### **Harper's Beauty (*Harperocallis flava*), Apalachicola National Forest**

Harper's Beauty is one of the rarest plant species in Florida. It is a narrowly endemic genus found primarily on the ANF in Franklin and Liberty counties, with one recent population located on a private parcel in Bay County. FNAI currently ranks the species as G1/S1, indicating it is considered critically imperiled throughout its range. It is listed as endangered by the USFWS. The historical range and past population numbers of this lily are unknown. However, the fact that it was not discovered until 1965 suggests that it may have historically had a very narrow range.

A component of the longleaf pine-wiregrass community, Harper's beauty is typically found in seepage bogs or on the upper mid-slope of transition zones between longleaf pine ridges and cypress swamps or stringers. It is occasionally found along savanna edges bordering stringers or creeks in sparse wiregrass. It grows most prolifically in places where there is little competing vegetation. Soil moisture may be less limiting for this species than competition from other plants.

Approximately 30+ natural sites have been documented, mostly during the last 6-7 years of intensive species-specific surveys. The relative importance of these Forest Service populations for species conservation is enormous. Occurrences extend across twelve compartments. Based on best available data, the total population within the ANF is believed to be within 900-2,500 individuals. A number of populations (as much as ~10% of total population) occur within a seven-mile roadside stretch between Wilma and Sumatra on State Road 65 and cannot be considered secure due to ongoing road maintenance and potential future road widening projects.

Two monitoring objectives were developed for Harper's beauty. Field surveys were conducted to update known occurrence records and to search for new populations in four prescribed burned compartments (C31, 32, 66, 80), as well monitoring pre- and post-harvest in the Rock Pond Timber Sale.

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**Table 6. Methodology designed for monitoring Harper’s beauty.**

<p><u>Quantitative Objective 1:</u> The number of compartments that contain <i>Harperocallis flava</i> across ANF remains within 90% of known locations until 2020.</p> <p><u>Monitoring methods:</u> Visit every compartment where <i>Harperocallis flava</i> occurs AND management has occurred (i.e., prescribed fire, timber, etc.) and document presence/absence in known locations within the compartment.</p> <p><u>Quantitative Objective 2:</u> If the qualitative ocular estimate of density in any unit changes (decreases or increases by at least on category) actively look for any coincident activities with a potential impact.</p> <p><u>Monitoring methods:</u> In each compartment a qualitative ocular estimate of the density of <i>Harperocallis flava</i> plants should be made in each population. After thorough examination of the population by walking through each compartment a density estimate should be assigned. Density categories are as follows: 1-10 plants, 11-50 plants, 51-100 plants, 101-1000 plants, 1001-10,000 plants, and &gt;10,001 plants. Photographs should be taken of all density categories to help calibrate different surveyors and improve consistency. A GPS should be used to mark the boundaries of populations or pictures drawn describing where the populations are within the compartments.</p>
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**Results**

Surveys for new populations of Harper’s beauty were conducted in savannas, seepage slopes and pitcherplant bogs in the vicinity of known occurrences, with special attention paid to transition areas around shrub zones. No new populations were found. Individuals were also relocated at all previously known locations, albeit some the numbers had dropped slightly from previous years. This species may require additional time to recover from prescribed fires. Population sizes for Harper’s beauty ranged from individual flowering plants to hundreds of flowering plants. Most points contained fewer than 50 plants. There appeared to be no discernable impacts from the timber harvest, largely due to mitigation measures (successful avoidance). Density categories in compartments where management occurred did not change.

**Table 7. Results of 2008 monitoring for Harper’s beauty**

Measure	Year
	2008
Number compartments containing this species (observed)	12
For compartments where management occurred in year, the number of locations where species was found to be present in known locations	No change from pre-treatment
For compartments where management occurred in year, the number of locations where species was found to be absent from known locations	0

**Evaluation and Recommendations**

Monitoring data from 2008 and previous years indicate that Harper’s beauty appears to be secure on the forest in at least the short-term, although the total known population is small and extensive loss of suitable habitat due to encroachment by woody species has resulted in reduced population sizes compared to historic levels. The ecological needs of this species are poorly understood. Select populations of Harper’s beauty should be monitored for several years post burn to develop a clearer understanding of population dynamics and prescribed fire. Additional, post-prescribed burn data is needed for the timber sale stands.

**White Birds-in-a-nest (*Macbridea alba*), Apalachicola National Forest**

White birds-in-a-nest is a rare Florida endemic species narrowly restricted to four central panhandle counties. FNAI currently ranks this mint as G2/S2, indicating it is imperiled throughout its global and state range. It is listed as threatened by the USFWS. The forest contains the most robust populations, with the largest numbers of individuals. Known populations occur in 12 compartments, extending from the Post Office Bay area to the forest's southern boundary.

White birds-in-a-nest is found in patches in wet to mesic pine flatwoods and is quite conspicuous and unmistakable when in flower. It most commonly grows along the upper portion of ecotones between pine flatwoods and swamps, wetland stringers, seepage bogs, savanna edges, or seepage zones. It is also sparingly observed on drier sites with longleaf pine and runner oaks, as well as along associated roadsides.

Two monitoring objectives were developed for white birds-in-a-nest. Monitoring in 2008 was conducted in four compartments (C101, 102, 109, 110) following prescribed fire and individuals were mapped in three stands pre- and post-harvest in the Hunt Timber Sale (harvested in 2006).

**Table 8. Methodology designed for monitoring white birds-in-a-nest.**

<p><u>Quantitative Objective 1:</u> The number of populations (EOs) of <i>M. alba</i> across ANF remains within 90% of known locations until 2020.</p> <p><u>Monitoring methods:</u> Visit every population of <i>M. alba</i> within compartments where management has occurred (i.e., prescribed fire, timbering, etc.) and document presence/absence in each population.</p> <p><u>Quantitative Objective 2:</u> If the qualitative ocular estimate of density in any population changes (decreases or increases by at least one category) actively look for any coincident activities with a potential impact.</p> <p><u>Monitoring methods:</u> In each population a qualitative ocular estimate of the density of <i>M. alba</i> plants should be made. After thorough examination of the population a density estimate should be assigned. Density categories are as follows: 1-10 plants, 11-50 plants, 51-100 plants, 101-1000 plants, 1001-10,000 plants, and &gt;10,001 plants. Photographs should be taken of all density categories to help calibrate different surveyors and improve consistency. A GPS should be used to mark the boundaries of populations or pictures drawn describing where the populations are within the compartments.</p>
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**Results**

Potential habitat for white birds-in-a-nest was identified and surveyed resulting in two new sub-EOs identified in C102 and four in C109. Individuals were relocated at all previously known locations, with population numbers approximate to previous surveys – and no changes in density categories. This is not surprising as each compartment surveyed is noted for extensive and vigorous sites. Population sizes ranged from ones with relatively isolated individuals to concentrations of over 150 plants. There appeared to be no discernable impacts from the timber harvest, but post-prescribed burn data is necessary.

While white birds-in-a-nest needs a relatively open canopy to flourish, there are some indications that the species may be especially sensitive to direct impact during timber harvests. During the Hunt Timber Sale (from January 2005 - December 2007), a contractor mistakenly drove logging equipment over some previously recorded white birds-in-a-nest sites. According to District ecological staff, groundcover disturbance was reportedly within normal levels associated with harvests. Numbers of white birds-in-a-nest appeared to decline, although individuals did survive and bloom post-harvest. Staff also report that old loading decks (e.g., from the 1980s) that were

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apparently sited within populations of white birds-in-a-nest do not currently support this species (although it does occur around the decks).

**Table 9. Results of 2008 monitoring for white birds-in-a-nest**

Measure	Year
	2008
Number of EOs of the species on ANF	41 (+ 6 new in 2008)
For compartments where management occurred in year, the number of EOs where species was found to be present in known locations	All previous EOs present
For compartment where management occurred in year, the number of EOs where species was found to be absent from known locations	0

**Evaluation and Recommendations**

Monitoring data from 2008 and previous years indicate that white birds-in-a-nest appears to be secure on the forest. More needs to be learned about the species' ecological needs and potential impacts of land management actions. Selected populations should be monitored several years post burn to develop a clearer understanding of population dynamics, prescribed fire, and drought conditions. Such monitoring should also be conducted in the Hunt Timber Sale area to more fully understand direct impacts of timber harvest activities.

**Britton's bear grass (*Nolina brittoniana*) , Ocala National Forest**

Britton's bear grass, in the Agave family, is endemic to central Florida. FNAI currently ranks it as G2/S2, indicating it is imperiled throughout its global and state range. It is listed as endangered by the USFWS. Although it can occur in scrub, sandhill, and xeric hammock, it is known only from a small area of sandhill on the Ocala National Forest. The known population consists of only a few observed individuals, with as few as 6.

**Results**

Given the apparently small population of this species on the forest and its occurrence over a very limited area, a formal monitoring protocol was not developed in 2007.

The habitat that it occurs in is overdue for burning, both suppressing the individual plants and rendering accurate surveys unfeasible. The habitat is planned for prescribed burning in 2009, and surveys for this species will be conducted post-fire.

**Evaluation and Recommendations**

The population of Britton's bear grass on the forest is not secure because it is precariously small. Efforts need to be made to verify the population size on the forest. Each time the stand it occurs in is burned, a complete census should be conducted of the few recorded plants, and a survey of the stand should be conducted for additional individuals. Augmentation of the population using local seed sources may be warranted.

**Godfrey's Butterwort (*Pinguicula ionantha*), Apalachicola National Forest**

Godfrey's butterwort is a very narrow endemic species known from 64 occurrences in five central Florida panhandle counties, with most sites having very few individuals. As a group, butterworts are among Florida's rarest plants and this species is the rarest of these carnivorous species. FNAI currently ranks it as G2/S2, indicating it is imperiled throughout its global and state range. It is listed as threatened by the USFWS. Fifty occurrences extend from north of the Post Office Bay

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area to the district’s southern boundary in 21 compartments. Disjunct populations also occur further north within the forest. Because Godfrey’s butterwort cannot be positively distinguished from other butterwort species when not in flower and the species typically has a short bloom period (March-April), the actual amount of time to survey for this species in any given year is short. Consequently, it is likely that there are occurrences of the species that are not recorded.

Godfrey’s butterwort occurs in open seepage slopes, bogs, transition zones between flatwoods and cypress stringers, depressions in wet pine flatwoods, and savanna edges with sparse wiregrass, often occurring in shallow standing water. This butterwort is also observed along cypress or gum ponds or stringers, and roadside ditches.

Two monitoring objectives were developed for this species. Monitoring and field surveys occurred in five compartments (C32, 69, 73, 80, 102) and in the Rock Pond Timber Sale. A GPS unit was used in the field to develop a polygon boundary around extensive populations.

**Table 10. Methodology designed for monitoring Godfrey’s butterwort.**

<p><u>Quantitative Objective 1:</u> The number of populations (EOs) of Godfrey’s butterwort across ANF remains within 80% of known locations until 2020.</p> <p><u>Monitoring methods:</u> Visit 30% of populations each year and document presence/absence. Each population should be visited every third year.</p> <p><u>Quantitative Objective 2:</u> If the qualitative ocular estimate of density in any population changes (decreases or increases by at least one category) actively look for any coincident activities with a potential impact.</p> <p><u>Monitoring methods:</u> At each population visited in a given year under Objective 1, a qualitative ocular estimate of the density of Godfrey’s butterwort plants should be made in each population. After thorough examination of the population by walking through each population a density estimate should be assigned. Density categories are as follows: 1-10 plants, 11-50 plants, 51-100 plants, 101-1000 plants, 1001-10,000 plants, and &gt;10,001 plants. Photographs should be taken of all density categories to help calibrate different surveyors and improve consistency.</p>
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**Results**

In 2008, more than 40 individual GPS points were recorded for Godfrey’s butterwort. Eight polygons were drawn around extensive clusters of points. Population sizes ranged from fewer than five individual plants and occupying an area of less than one square meter to more than 120 plants scattered across an area of fewer than 0.25 acres. There appeared to be no discernable impacts from the timber harvest, largely due to mitigation (avoidance) measures – density categories did not change.

**Table 11. Results of 2008 monitoring for Godfrey’s butterwort**

Measure	
	2008
Number of EOs of the species on ANF	50+
Visit each EO every third year (1/3 per year):	
Number of EOs visited where the species was documented to be present	All previous EOs present
Number of EOs visited where the species was documented to be absent	0

**Evaluation and Recommendations**

Monitoring data from 2008 and previous years indicate that Godfrey’s butterwort is secure on the forest and it is probable that unrecorded occurrences are present. However, because the species occurs primarily in the wetter edges of savannas and in ecotones with forested wetlands, it is especially vulnerable to encroachment by woody species. It is often found under shrubs that have encroached on the grasslands. Extensive loss of suitable habitat due to encroachment by woody species has logically resulted in reduced population sizes compared to historic levels. Keslar 2008\* suggested that annual growing and biannual dormant season fires maximized population growth for Godfrey’s butterwort. To provide optimal conditions for this species, prescribed fire should be applied as frequently as feasible, and should include reduction of hardwood encroachment as a primary objective.

\* Keslar, H.C., J.L. Trusty, S.M. Hermann, and C. Guyer. 2008. Demographic responses of *Pinguicula ionantha* to prescribed fire: a regression-design LTRE approach. *Oecologia* 156:545–557.

**Lewton’s Milkwort (*Polygala lewtonii*), Ocala National Forest**

Lewton’s milkwort is endemic to central Florida ridges. There are 36 occurrence records from six central Florida counties, beginning in Marion County south to Highlands County FNAI ranks the species as G3/S3, meaning this species is rare, restricted or otherwise vulnerable to extinction within its global and state range. It is listed as endangered by the USFWS.

Ten stands on the ONF contain documented Lewton’s polygala. It occurs primarily on sandhill, with small numbers in scrub.

**Table 12. Methodology designed for monitoring Lewton’s polygala.**

<p>Hugh’s Island population</p> <p><u>Quantitative Objective 1:</u> Area occupied by the Hugh’s Island sandhill populations of Lewton’s polygala north and south of FR 10 does not decrease by &gt;20% over any two year period.</p> <p><u>Monitoring methods:</u> Annually GPS the perimeter of the populations at Hugh’s Island north and south of the FR 10.</p> <p><u>Quantitative Objective 2:</u> If the qualitative ocular estimate of density in either of the two Hugh’s Island populations decreases by at least one category actively look for any coincident activities with potential impacts.</p> <p><u>Monitoring methods:</u> A qualitative ocular estimate of the density of Lewton’s polygala plants should be made in each of the north and south populations. After thorough examination of the population by walking through and around each population a density estimate should be assigned. Density categories are as follows: 1-10 plants, 11-50 plants, 51-100 plants, 101-1000 plants, 1001-10,000 plants, and &gt;10,001 plants. Photographs should be taken of all density categories to help calibrate different surveyors and improve consistency.</p> <p>Other Lewton’s polygala locations</p> <p><u>Quantitative Objective 3:</u> By 2020, recover Lewton’s polygala outside Hugh’s Island to at least 50 individuals in at least 10 locations.</p> <p><u>Monitoring methods:</u> Annually visit and census all known locations of Lewton’s polygala. In the 10 most suitable locations management activities (prescribed fire, hand clearing, etc.) should be performed to encourage reproduction and plant recruitment. If the number of plants counted decreases by &gt; 10% in any of the recovery locations, current management is re-evaluated and fire management is triggered.</p>
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**Results**

Populations on the Hugh’s Island sandhill remained large and vigorous in 2008. Replanting longleaf pine (*Pinus palustris*) has allowed the Lewton’s polygala population to increase in numbers. Bare ground created by the planting furrows has provided a substrate for abundant Lewton’s polygala seedling establishment. In the table below, *Total acres occupied* increased from 170 acres reported in 2007; however, the forest botanist indicates that this is not an actual increase because ~20 acres with the species had just been burned and was overlooked in 2007.

Populations outside of Hugh’s Island seem to be decreasing in size and vigor. One reason for this decline is the lack of fire treatment in these areas. Hugh’s Island is on a two to three year burn rotation. This maintains optimal habitat conditions and increase seed germination (Carl Weekley, Archbold Biological Station, personal communication). The Forest Service is making changes to scrub habitat management to include burning after timber sales.

**Table 13. Results of 2008 monitoring for Lewton’s milkwort**

<b>Lewton’s Polygala Quantitative Objective 1</b>	<b>Results</b>
On Hugh’s Island	
Total acres occupied	190
Population estimate N side	high density in patches
Population estimate S side	present
<b>Lewton’s Polygala Quantitative Objective 2</b>	
Off Hugh’s Island	
Total # EOs	51
# EOs visited	21
# EOs sp present	7
# EOs sp absent	14

**Evaluation and Recommendations**

Monitoring data from 2008 and previous years indicate that Lewton’s milkwort is secure on the forest. However, although a large population on Hugh’s Island appears to be flourishing, sites off of Hugh’s Island that are currently monitored appear to be declining. Frequent prescribed fire is critical to maintaining openings in the dense herbaceous groundcover and could aid in expansion of this species on the forest. The sandhill at Hugh’s Island should continue to be burned on a one to three year interval. Consideration should also be given to burning other sandhill occurrences of this species on a  $\leq 3$  year rotation. The Hugh’s Island population should be monitored the year following burning, a modification of the monitoring protocol. If the Lewton’s polygala sites in scrub are to rebound, they must be managed at an earlier successional stage than has traditionally been maintained in the scrub on the ONF - requiring removal of mature sand pine, mechanical removal of scrub oaks/ other shrubs, and/or application of fire at more frequent intervals. Inclusion of the scrub locations of Lewton’s polygala within the Florida Scrub-Jay management area adjacent to Hugh’s island improves the chances for their successful management.

**Florida Skullcap (*Scutellaria floridana*), Apalachicola National Forest**

Florida skullcap is a narrowly endemic species in the mint family found in a restricted range in three Florida Panhandle counties. FNAI ranks Florida skullcap as G1/S1, indicating it is considered critically imperiled throughout its global and state range. The USFWS lists this species as endangered. Of the total 23 known occurrences, 16 occur on the Apalachicola Ranger District of the ANF. Populations are few and disjunct across fourteen compartments.

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Florida skullcap is most commonly found in grassy seepage bog communities on gentle slopes at the edges of forested/ shrubby wetlands or in savannas near the edges of included wetlands such as bay stringers. This species is also observed in the ecotones between mesic flatwoods and swamps or grassy margins of wetland stringers.

Two monitoring objectives were developed for the species. Survey sites included several extensive sites directly impacted by the Smokehouse Timber Sale (C4) and one prescribed burned compartment (C73).

**Table 14. Methodology designed for monitoring Florida Skullcap.**

<p><u>Quantitative Objective 1:</u> The number of compartments that contain <i>S. floridana</i> across ANF remains within 90% of known locations until 2020.</p> <p><u>Monitoring methods:</u> Visit every compartment where <i>S. floridana</i> occurs AND management has occurred (i.e., prescribed fire, timbering, etc.) and document presence/absence in known locations within the compartment.</p> <p><u>Quantitative Objective 2:</u> If the qualitative ocular estimate of density in any unit changes (decreases or increases by at least on category) actively look for any coincident activities with a potential impact.</p> <p><u>Monitoring methods:</u> In each compartment a qualitative ocular estimate of the density of <i>S. floridana</i> plants should be made in each population. After thorough examination of the population by walking through each compartment a density estimate should be assigned. Density categories are as follows: 1-10 plants, 11-50 plants, 51-100 plants, 101-1000 plants, 1001-10,000 plants, and &gt;10,001 plants. Photographs should be taken of all density categories to help calibrate different surveyors and improve consistency. A GPS unit should be used to mark the boundaries of populations or pictures drawn describing where the populations are within the compartments.</p>
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**Results**

In 2008, data collected at 426 points in the Smokehouse Timber Sale and C73 indicate a range in population sizes from a few scattered individuals to as many as 1,200 flowering plants. The species was extremely variable in its flowering, often found in leaf, fruit and flower within the same area. There was no change in density categories.

Post-harvest data in the Smokehouse Timber Sale was collected solely for individuals blooming in the harvested rows (bloom in response to disturbance).

**Table 15. Results of 2008 monitoring for Florida skullcap**

Measure	Year
	2008
Number of compartments on ANF where the species occurs	14
For compartments where management occurred in year, the number of locations where species was found to be present in known locations	All previous EOs present
For compartment where management occurred in year, the number of EOs where species was found to be absent from known locations	0

**Evaluation and Recommendations**

Monitoring data from 2008 and previous years indicate that Florida skullcap is secure on the forest. However, large areas where the species occurs have been planted to slash pine in the past and now occur in or adjacent to relatively high basal areas with reduced light penetration.

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Although logging equipment was walked directly across some skullcap individuals in the Smokehouse Timber Sale, there appeared to be no discernable impacts to skullcap abundance. Additional post-prescribed burn data is needed for the Smokehouse Timber Sale stands to show skullcap population trends following harvest in conjunction with prescribed fire. Efforts to substantially thin or clearcut plantations over or adjacent to skullcap populations during operable periods should continue. Whenever feasible, planted pines should be clearcut when they shade or otherwise impact occurrences of Florida skullcap.

### OTHER MIS SPECIES ACCOUNTS

#### **Wiregrass** (*Aristida beyrichiana*)

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

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

#### **Toothache Grass** (*Ctenium aromaticum*)

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

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

#### **Sand Live Oak** (*Quercus geminata*)

**Results:** Sand live oak was selected as an indicator of oak dome communities that occur as inclusions within longleaf pine islands on the ONF. There was concern that efforts to maintain and, in some cases, restore these longleaf pine islands would overlook the oak domes, which historically have been and continue to be important inclusions.

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

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### **Curtiss Dropseed** (*Sporobolus curtissii*)

**Results:** Curtiss Dropseed is a component of the mesic to poorly drained longleaf pine flatwoods. It has been observed on four of the five districts of the National Forests in Florida. Curtiss dropseed is usually a co-dominant species in the groundcover, with such species as wiregrass and saw palmetto (*Serenoa repens*). It is a long-lived perennial bunch grass that depends heavily on fire and is sensitive to mechanical disturbance. It is distributed widely enough to be of value as a management indicator. Curtiss dropseed is ranked G3 by The Nature Conservancy and is proposed for inclusion on the next revision of the Region 9 Sensitive Species List.

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

### **Florida Dropseed** (*Sporobolus floridanus*)

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

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

### **Pineywoods Dropseed** (*Sporobolus junceus*)

**Results:** Pineywoods dropseed is known from both ANF and ONF districts. There is some potential of occurrence on the better drained areas of the Osceola Ranger District but there are no records of occurrence on that forest. Pineywoods dropseed is not considered imperiled, but the sandhill community that supports it is ranked G2G3. The species distribution is broad enough on the forest for it to serve as a management indicator on the sandhill communities.

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

### **Xyris stricta**

**Results:** *Xyris stricta*, an obligate wetland species, is a component of the groundcover of the cypress (*Taxodium ascendens*) domes and strands. It is known from both districts of the ANF and from the Osceola Ranger District. Communities in which *Xyris stricta* occurs are dependent on relatively frequent fire to maintain a graminoid-dominated groundcover with little midstory development. *Xyris stricta* is thought to serve as a good indicator of the ecological health of these fire dependent wetlands.

**Evaluation:** According to the Forest Plan, cypress dominated wetland communities are not suitable for timber harvest. For this reason, there should be few impacts by USFS projects to these communities. The greatest threat is the lack of fire entering frequently enough to maintain

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community structure and composition. Another threat is the use of mechanized equipment in fire suppression.

**Wildlife and Fish**

**Southern Bald Eagle** (*Haliaeetus I. leucocephalus*)

**Results:** Bald eagles currently nest along the St. John’s River on and near the Ocala National Forest and in several locations on the Apalachicola National Forest and was identified to serve as an indicator of bottomland forest, floodplain swamp, and lake/pond habitat although current knowledge indicates that the species is more widely adapted to other areas as well.. Table 16 shows monitoring results for bald eagle pairs on the National Forests in Florida.

**Table 16.  
Number of Bald Eagle Pairs  
National Forests in Florida**

Year	Apalachicola. NF	Osceola NF	Ocala NF
1992	1	0	20
1993	0	0	31
1994	0	0	37
1995	0	0	40
1996	0	0	32
1997	2	0	23
1998	2	0	54
1999	0	0	47
2000	0	0	48
2001	1	0	54
2002	1	0	49
2003	2	0	55
2004-05	5	0	49
2005-06	6	0	50
2006-07	5	1	49
2007-08	5	1	53

In 2007-2008, bald eagles on the Ocala National Forest produced 67 downy young. From these, 57 fledglings were successfully produced. The bald eagle population on the Ocala National Forest has been stable to increasing for more than 10 years, and the Apalachicola population is beginning to increase. We are especially excited to have a new nest on the Osceola NF.

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**Table 17. Active Nests/Fledglings**

Year	Apalachicola NF	Osceola NF	Lake George RD	Seminole RD
1992	0/0	0/0	19/22	1/1
1993	0/0	0/0	28/19	3/3
1994	0/0	0/0	35/38	2/5
1995	0/0	0/0	36/32	4/3
1996	0/0	0/0	30/32	2/1
1997	0/0	0/0	22/18	1/2
1998	0/0	0/0	47/41	7/3
1999	0/0	0/0	44/52	3/2
2000	0/0	0/0	43/49	5/5
2001	1/1	0/0	47/50	7/7
2002	1/2	0/0	44/47	7/8
2003	2/4	0/0	69/58	5/3
2004	2/3	0/0	47/31	6/5
2005	5/5	0/0	44/45	5/8
2006	6/3*	0/0	50/33**	
2007	5/no data	1/no data	50/61**	
2008	No data	1/no data	53/57**	

\*Due to time constraints, all 6 confirmed active nests could not be visited at the proper times to determine numbers of nestlings and fledglings. Three fledglings is therefore a conservative count.

\*\*Due to an administrative consolidation, the data will now be reported for the Ocala National Forest instead of separately for the Lake George and Seminole Ranger Districts. In past years, data for nests within 6 miles of the National Forest boundary has been reported. This will no longer be done.

**Evaluation:** The desired outcome is a stable to increasing number of fledglings produced each year. Prior to 2005-2006, the trend was showing an increase. Number of fledglings is back up for the 2006-07 reporting period. The Ocala trend is confounded by the change in the reporting area. We will have to examine future year's counts to reestablish a trend, but we have no reason to think there is a problem with the Ocala bald eagle population. Because of recovery of bald eagle populations throughout the lower 48 United States, the species has recently been removed from the federally endangered species list by the US Fish and Wildlife Service. The National Forests in Florida will continue to track the species as an MIS and as a Regional Forester's Sensitive Species.

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

**Other bird species**

Birds, with the exception of the bald eagle, are monitored primarily by the Breeding Bird Survey (BBS) routes and by the R8Bird (off-road) point counts. Each BBS route is 25 miles long; typically along a minor paved road or a natural-surface forest road. Each route consists of 50 "stops", or sampling points ½ mile apart. One useful aspect of the BBS data is that it provides casual (or

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expert) birders a relative index of how likely it is they will see a particular species of bird along a typical forest roadside, since that's where these data are collected. Additionally, the National Forests in Florida are participating, along with other National Forests in the southeastern region, in the land bird conservation, monitoring, and inventory strategy nicknamed "R8 Bird". The R8Bird point counts began on the Ocala districts with 80 sampling points in 1997, on the Wakulla District with 30 points in 2001, and on the Apalachicola District (30 points) and Osceola in 2002 (30 points). In 2004, the Osceola added 5 points in the northern (Pinhook) portion of the Forest to represent that unique habitat type. Each point samples approximately 2 acres of habitat and points are at least 250 meters (820 feet) apart. Point locations were established based on the protocol outlined in "*The Southern National Forest's Migratory and Resident Landbird Conservation Strategy*" (USDA Forest Service, R-8, Fisheries, Wildlife, and Range Unit, June, 1996). In 2005 the Forest Service Regional Office contracted with Dr. Frank Thompson (North Central Forest Research Station) to analyze the R8Bird data collected to date. Preliminary results from that analysis will be reported for all bird species included in this Monitoring Report.

Additionally, with the advent of designated Upland Ecosystem Restoration Project Areas (UERP) on National Forest Lands, surveys for both the Northern bobwhite quail and other non-game bird species will be taken. Plans to use a combination of flush transects and spring bird point counts will be utilized to maximize the amount of data gathered for bird species within the UERP. The data collected will then be stored, analyzed, and interpreted at Tall Timbers Research Lab. This data in concert with data taken from R8Bird point counts and the BBS should provide the National Forests in Florida with a strong baseline of data and trend data into the future to monitor our land management decisions and to ensure viable, if not, increasing populations of PETS bird species.

### **Northern Bobwhite** (*Colinus virginianus*)

**Results:** The bobwhite quail serves as an indicator species for sandhill and flatwoods communities on the National Forests in Florida. The FWC felt that the data from quail call counts was of marginal value and are no longer conducted universally on the National Forests in Florida. However quail covey call counts were conducted on the Upland Ecosystem Restoration Project (UERP) on the Apalachicola National Forest, Wakulla District and on the Ocala National Forest, Church Lake UERP. Call counts were also implemented on the Osceola National Forest. Quail will continue to be censused, along with all other bird species, on BBS routes and at the R8 Bird Point Count locations on all three National Forests.

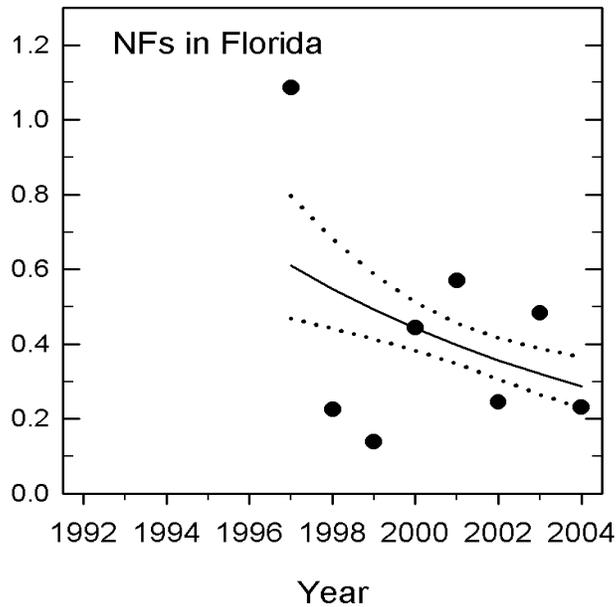
Quail counts from all methods are generally very low but appear to be fundamentally stable on all forests (Table 12). The low densities appear to be in accord with the distribution maps for the area published by the BBS.

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**Table 18. National Forests in Florida Bobwhite Quail Counts Birds per Station**

<b>Year</b>	<b>Apalachicola RD: Call routes, R8Bird, BBS</b>	<b>Wakulla RD: Call routes, R8Bird, BBS</b>	<b>Osceola RD: Call routes, R8 Bird, BBS</b>	<b>Lake George RD: Call routes, Riverside (R8Bird), Ocala BBS</b>	<b>Seminole RD: Church Lake, Tomahawk, Paisley (R8Bird only)</b>
1992	0.28, 0.08	0.54	No data, 0.02	0.2, 0.14	0.6, 2.4
1993	0.19, no data	0.19	0.24, 0	0.6, 0.1	0.9, <0.1
1994	0.18, no data	0.75	0.15, 0.10	<0.1, 0.1	0.7, 0.5
1995	0.23, 0.04	1.01	1.03, 0.08	0.9, 0.18	0.2, 0.3
1996	0.22, 0.12	0.21	0.46, no data	0.1, 0.14	1.0, 0.5
1997	0.33, 0.04	0.26	0.71, 0.08	0.1, 0.12, 0.25	0.8, 0.1, 0.8
1998	No data, 0.12	No data	0.98, 0.08	0.2, 0.06, 0.05	0.3, 0.5, 0.28
1999	No data, 0.22	No data	0.41, 0.18	0.5, 0.04, 0.13	0.9, 0.3, 0.08
2000	No data, 0.04	No data	0.08, no data	0.1, 0.14, 0.1	1.2, 1.1, 0.58
2001	No data, 0.01	No data, 0.97, 0.1	0.02, no data	No data, 0.38, 0.15	0.5, 0.9, 0.25
2002	No data, 0.08	No data, 0.1, 0.1	0.0, 0.1, 0.12	No data, 0.06, 0.05	0.45
2003	ND, 0.47, 0.06	ND, 0.13, 0.2	0.08, 0.2, 0.09	ND, 0.0, 0.11	0.0
2004	ND, 0.03, 0.1	ND, 0, 0.14	0.18, 0, 0.1	ND, 0.3, 0.1	0.2
2005	ND, 0.07, 0.09	ND, 0.13, 0.04	0.8, 0.09, 0.02	ND, 0.4, 0.1	0.6
2006	ND, 0.2, 0.05	ND, 0.26, 0.09	0.9, 0.09, 0.10	ND, 0.33, 0.10	0.35
2007	ND, 0.2, 0.06	ND, 0.2, 0.09	0.6, 0.2, 0.10	ND, 0.8, 0.10	1.0
2008	ND, 0.03, 0.27	UERP: 2.22, 0, 0.27	0.87, 0.06, 0.11	ND, 0.45, 0.10	UERP, ND, 0.55

In 2005 the Regional Office contracted with Dr. Frank Thompson (North Central Forest Research Station) to analyze the R8Bird data collected to date. The graphic below summarizes the Mean Abundance (per point) of Northern Bobwhite from 1997 through 2004 from Thompson's analysis (LaSorte, et al. 2007):



**Figure 1.** Northern bobwhite quail censused per R8 Bird sampling point (vertical axis), 1997 through 2004 on the National Forests in Florida.

**Evaluation:** The desired outcome is 7 or more coveys (groups of 6 – 20 birds) per 100 acres of suitable habitat with stable to increasing trend. This target was set in: *Hunter, C. et al. 2001. Partners in Flight Bird Conservation Plan for the South Atlantic Coastal Plain. American Bird Conservancy. 166pp.* Assuming 2 acres per point, and assuming that there is at least one non-calling bird for every call recorded, the counts range from 0 to 120 birds per 100 acres for all data collected from 1991-2007. Although it is not possible to directly extrapolate from numbers of individual birds seen or heard to numbers of coveys, it is safe to assume that in some areas, the Forests have good quail populations, and in others the population is low to non-existent. Low quail densities on the National Forests are a reflection of low densities statewide.

The National Forests are an active partner in the Upland Ecosystem Restoration Project, a state-wide initiative that was established in 2006. This initiative will coordinate and promote habitat management for quail and other early successional species on private and public land and will hopefully reverse the downward population trend for quail and several other species. Through this partnership and partnership with the conservation group Quail Unlimited, the Forests have planned and funded quail management projects on all three Forests The UERP on the Wakulla District consists of 4,365 acres to which annual quail covey call counts are performed by FWC biologist. Our data sources do not reflect consistent trends on the forests. BBS maps show a slight downward trend in those portions of the State that encompass the forest, but forest specific data does not appear to reflect any trends with any real certainty. Additional years of data collection at the R8 Bird sample points will give an improved idea of population trend in the future, and project area-specific monitoring projects will help to determine the efficacy of the land management treatments. The data analysis of LaSorte, et al. (2007) shown above as Figure 1 reflects a 10.2% annual decline in the species. The 2008 data collected shows both a positive and negative trend depending on location and thus will need more time to confidently show any degree of reversal in the decline documented from 1997-2004.

**Pileated woodpecker (*Dryocopus pileatus*), PIWO**

**Results:** This species is sampled using the BBS routes and the R8 Land bird survey. The pileated is found in all seasons in Florida with primary habitats being mature and extensive

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forests. It occurs in both deep woods and swamps as well as in rather open and upland forests. It seems most numerous in river-bottom hardwoods. Consequently, this species was chosen as an MIS in the Forest Plan for swamp communities including bottomland forest and strand and dome swamps. On the Ocala, the species also occurs in the longleaf pine and sand pine scrub communities.

**Table 19.**  
**National Forests in Florida BBS Routes**  
**Pileated Woodpeckers Counted per Station**

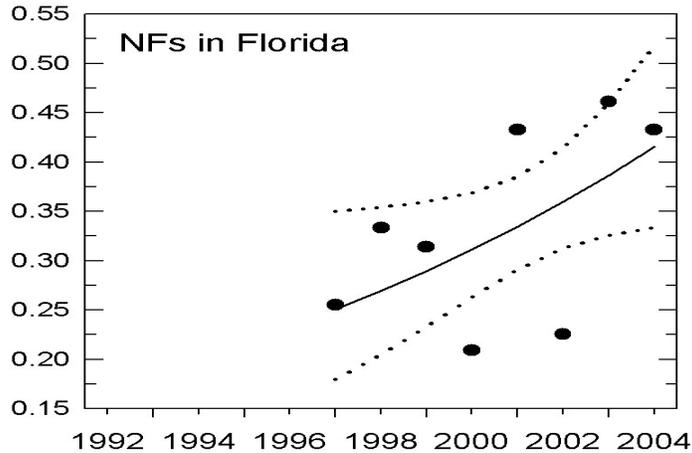
Year	Apalachicola	Osceola	Ocala
1992	0.08	0.14	0.04
1993	No data	0.14	0.04
1994	No data	0.14	0.04
1995	0.18	0.08	0.02
1996	0.08	No data	0
1997	0.32	0.12	0.06
1998	0.12	0.12	0
1999	0.12	0.12	0.02
2000	0.14	0.10	0.04
2001	0.22	No data	0.02
2002	0.13	0.11	0.04
2003	0.10	0.15	0.03
2004	0.12	0.14	0.03
2005	0.05	0.14	0.02
2006	0.07	0.14	0.03
2007	0.07	0.14	0.03
2008	0.06	0.14	0.02

Additional pileated woodpecker monitoring has been developed from points established as part of the R8 Landbird Monitoring strategy. From 1997 through 2001, 40 points each on the Ocala Districts (Lake George and Seminole) were monitored. In 2001, 30 points on the Wakulla District were added. In 2002, 30 points were added on the Apalachicola Ranger District and 30 were added on the Osceola NF, for a total of 170 points on the National Forests in Florida. Five more were added to the Osceola in 2004, for a grand total of 175 sampling points monitored by Steven P. Christman in 2008.

**Table 20.**  
**Pileated Woodpecker**  
**R8 Landbird Monitoring - Birds per Point**

Year	Apalachicola NF	Lake George RD	Seminole RD	Osceola NF
1997	No data	0.28	0.05	No data
1998	No data	0.18	0.28	No data
1999	No data	0.18	0.25	No data
2000	0.06	0.10	0.13	No data
2001	0.13	0.40	0.23	No data
2002	0.13	0.13	0.10	0.17
2003	0.2	0.17	0	0.03
2004	0.4	0.05	0.18	0.37
2005	0.52	0.125	0.2	0.34
2006	0.38	0.05	0.125	0.37
2007	0.30	0.08	0.05	0.43
2008	0.26	0.12	0.325	0.31

**Evaluation:** The desired outcome is a stable to increasing trend. BBS trend data for the state indicate that this species has been stable to slightly increasing in Florida since 1966. Considered as a separate group, the National Forest BBS routes show a slightly declining trend. Data from the R8 Bird routes is still too limited to make any population trend inferences. The LaSorte, et al. (2007) data show a 7.5% annual population increase for the species, however.



**Figure 2.** Pileated woodpeckers per R8 Bird sampling point (vertical axis) on the National Forests in Florida, 1997 through 2004.

Forest plan standards and guides (VG-8, VG10, VG-11, VG-12) exclude hardwood stands from management for timber production and will retain large pine trees across the landscape that will eventually become the large snags necessary for pileated woodpecker nesting habitat. Adherence to these standards is expected to retain viable and increasing populations of this woodpecker across the National Forests in Florida.

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

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

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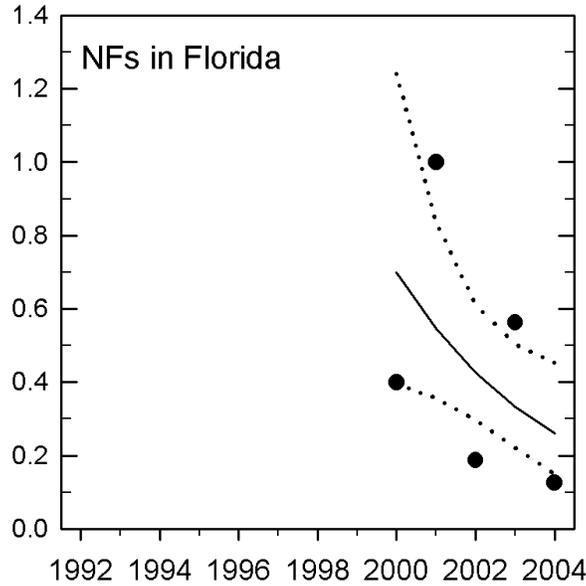
**Table 21.**  
**National Forests in Florida BBS Routes**  
**Prothonotary Warblers Counted per Station**

Year	Apalachicola	Osceola	Ocala
1992	0.46	0	No habitat on route
1993	No data	0.08	No habitat on route
1994	No data	0.06	No habitat on route
1995	0.58	0.04	No habitat on route
1996	0.56	No data	No habitat on route
1997	0.40	.04	No habitat on route
1998	0	0	No habitat on route
1999	0.56	0.04	No habitat on route
2000	0.46	0	No habitat on route
2001	0.34	No data	No habitat on route
2002	0.25	0.05	No habitat on route
2003	0.3	0.06	“ “
2004	0.4	0.05	“ “
2005	0.2	0.04	“ “
2006	0.25	0.05	“ “
2007	0.25	0.05	“ “
2008	0.15	0.04	“ “

**Table 22.**  
**National Forests in Florida R8 Bird Counts**  
**Prothonotary Warblers Counted per Station**

Year	Apalachicola Wakulla/Apalachicola	Osceola	Ocala
2008	0.10/0.83	0.057	No habitat on route

Analysis of the R8 Bird data by LaSorte, et al. (2007), however, shows a 21.9% annual decline (Figure 3). Continued monitoring of R8 Bird points in addition to the BBS routes should produce a better picture over time.



**Figure 3.** Numbers of Prothonotary warblers detected per R8 Bird sampling point (vertical axis), 2000 through 2004 on the National Forests in Florida.

**Evaluation:** The desired outcome is 15 or more pairs per 100 acres of suitable habitat with stable to increasing trend. This target is from: *Hunter, C. et al. 2001. Partners in Flight Bird Conservation Plan for the South Atlantic Coastal Plain. American Bird Conservancy. 166pp.* Data is highly variable, ranging from 0-29 pairs/100 acres (assuming 2 acres per point). The trend for the Prothonotary warbler from 2004 to present is flat on the Osceola, increasing on the ANF, and not present on the Ocala NF.

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

**Results:** The kestrel was selected as an MIS to monitor the health of early seral stage sandhill and scrubby flatwoods. Breeding bird survey route and R8 Bird point detections were limited to the Ocala National Forest until 1997 (Tables 23 and 24).

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**Table 23.**  
**Southeastern Kestrels Counted per Point**

Year	Ocala BBS	Lake George R8Bird	Seminole R8Bird
1992	0.04		
1993	0.02		
1994	0.04		
1995	0.02		
1996	0		
1997	0	0.08	0.13
1998	0.02	0.03	0.13
1999	0.02	0.03	0.13
2000	0.10	0.10	0.08
2001	0.04	0.10	0
2002	0.04	0	0
2003	0.02	0.03	0.08
2004	0.03	0.1	0.05
2005	0.12	0.08	0.03
2006	0.03	0.17	0.1
2007	0.03	0.05	0.03
2008	1.47	0.025	0.075

**Table 24.**  
**Kestrel Nest Box Checks**  
**Lake George RD**

Year	Boxes Checked/ Used by Kestrel
1992	127/23
1993	118/16
1994	201/31
1995	154/36
1996	147/31
1997	0/No data
1998	72/33
1999	6/2
2000	77/30
2001	34/14
2002	1/1
2003	Not Checked
2004	“ “
2005	“ “
2006	“ “
2007	“ “
2008	“ “

**Evaluation:** The desired outcome is a stable to increasing trend. The BBS trend maps show a decline for Florida, and that also appears to include the Ocala National Forest. Analysis of the R8 Bird data by La Sorte, et al. (2007) indicates a 9.7% annual decline. Present data supports the decline, however the degree of decline relative to 2007 is difficult to ascertain. Besides being cavity nesters, kestrels are open area hunters, so the emphasis on sand pine regeneration and placement of nest boxes should enable the southeastern kestrel to persist as a viable species on the Ocala National Forest.

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

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

The BBS routes on the Apalachicola National Forest have not been recording significant numbers of turkeys. Turkeys are too wary of humans to be counted accurately using a point count method. Due to limited resources, track count transects conducted in cooperation with the FWC have not been implemented on the ANF for the past five years. However, FWC biologists feel the populations of turkeys on the Forests may be at low densities, but are stable enough to support an annual hunting season.

**Table 25. Wild Turkey Tracks/mile – Apalachicola National Forest**

Year	Wakulla RD	Apalachicola RD
1993	0.17	0
1994	0.02	0
1995	0.10	0.30
1996	0.40	0.20
1997	0.30	0.30
1998	0.20	0.30
1999	0.36	0.25
2000	0.60	0.83
2001	0.17	0.17
2002	0.26	0.0
2003	0.57	0.09
2004	0.63	0.31
2005	No data	No data
2006	“	“
2007	“	“
2008	“	“

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

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

**Table 26.**  
**Ocala National Forest - Turkey Monitoring Sites**

Year	FFWCC Transects with Tracks	Lake George Bait Stations - % Active, birds seen per station
1991-92	24	
1992-93	23	
1993-94	31	55, 0.4
1994-95	84	38, 0.2
1995-96	59	56, 0.2
1996-97	105	43, 0.4
1997-98	142	74, 1.5
1998-99	132	72, 0.4
1999-00	129	54, 0.6
2000-01	134	44, 0.2
2001-02	108	46, 1.0
2002-03	98	67,3.2
2003-04	68	ND
2004-05	144	ND
2005-06	128	33,0.3
2006-07	198	ND
2007-08	119	ND

The FWC turkey track counts have represented a generally upward trend in the number of turkeys on the Ocala National Forest. The permitted hunting trend in Table 27 shows Commission confidence in an increasing population trend sufficient to support sport hunting.

**Table 27.**  
**Ocala National Forest - Turkey Permits and Harvest**

Year	Permits Issued/Harvest
1997-98	400/unknown
1998-99	400/unknown
1999-00	400/unknown
2000-01	1460/35
2001-02	1460/36
2002-03	1460/46
2003-04	1186/34
2004-05	1460/48
2005-06	1460/33
2006-07	1460/38
2007-08	1460/28

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

**Florida black bear (*Ursus americanus floridanus*)**

**Results:** The black bear once ranged across the state, but is now reduced to 6 core areas (Eglin, Apalachicola, Osceola, Ocala, St. Johns, and Big Cypress) and 2 remnant areas

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(Chassahowitzka and Glades/Highlands). There are approximately 2,000 bears inhabiting the National Forests in Florida, with the Juniper Wilderness on the Ocala National Forest, having the highest concentration of bears in the state.

Black bear monitoring has been ongoing on the Ocala National Forest in cooperation with Commission biologists for many years. Track count monitoring is being accomplished annually with the results shown in Table 28.

**Table 28.**  
**Black Bear Track Count Indices**  
**Ocala National Forest**

<b>Year</b>	<b>Tracks/100 miles</b>
<b>1991-92</b>	24
<b>1992-93</b>	26
<b>1993-94</b>	21
<b>1994-95</b>	39
<b>1995-96</b>	27
<b>1996-96</b>	33
<b>1997-98</b>	44
<b>1998-99</b>	31
<b>1999-00</b>	56
<b>2000-01</b>	67
<b>2001-02</b>	55
<b>2002-03</b>	50
<b>2003-04</b>	73
<b>2004-05</b>	96
<b>2005-06</b>	78
<b>2006-07</b>	87
<b>2007-08</b>	90

Track counts are not accomplished on the Osceola, however much good information on the bear population is found in the US Fish and Wildlife Service report "Population Ecology of Black Bears in the Okefenokee-Osceola Ecosystem" (USFWS 2002). This cooperative (US Fish and Wildlife Service/Osceola National Forest/FWC/Georgia Department of Natural Resources) study encompassed two study areas, one each in Georgia and Florida. The Florida portion (approximately 100,000 ac) included the southwest portion of Pinhook Swamp, the western portion of Impassable Bay, and adjacent private timber company lands. Private lands predominated. Study personnel captured 79 individual bears in Florida from 1996-1999 and estimated a bear population of 90 – 114 animals at that time.

The FWC views the northern portion of the Osceola as a desirable area for translocation of "problem" bears from other parts of the state. According to David Telesco, bear biologist for the FWC, the northern portion of the Osceola remains a designated translocation area for "problem bears".

Track counts are conducted on the Apalachicola National Forest in cooperation with Commission biologists (Table 29). As previously noted, the Apalachicola National Forest is one of the five major black bear population sites in the state. Due to personnel constraints, the FWC has been unable to collect track data on the ANF since 2004.

**Table 29.**  
**Black Bear Track Counts - Apalachicola National Forest**  
**Tracks/100 miles**

Year	Apalachicola RD	Wakulla RD
1993	2	3
1994	1	1
1995	1	1
1996	0	4
1997	12	4
1998	16	11
1999	14	19
2000	3	10
2001	2	15
2002	2	10
2003	2	35
2004	16	75
2005	No data	No data
2006	“	“
2007	“	“
2008	“	“

**Evaluation:** The desired outcome is a stable or slightly increasing population trend, and a decrease in nuisance bear complaints. Track counts ranged from 0 to 4 per 100 miles on Apalachicola in 1991-96, and increased to 19 in 1999. Since then, they have fluctuated between 15 and 10 tracks per 100 miles. Track counts averaged 31 per 100 miles on Ocala in 1991-98, and increased to 56 and 67 in 1999 and 2000, respectively. For 2002-2003, the Ocala track count dropped off to 50 per 100 miles. The bear population on the Ocala NF was influenced by relocation of 44 nuisance bears from other areas in 1999-2001. From 1978 through 2004, the FWC received about 8,300 “complaint” calls about black bears. Fifty-seven percent (4,700) of these calls involved bears from the Ocala population. In 2006, the latest year for which FWC data is available, there were a total of 2,149 bear complaint calls statewide, so it is likely that about 1,200 of them were about Ocala bears.

The Ocala National Forest is actively working with the FWC and with local citizens groups to educate the public about living with black bears. Educational materials have been produced and workshops and seminars are held on a regular basis. The Forest also participates in the annual Umatilla Bear Festival, a day-long event featuring educational booths, entertainment, crafts, and music, all with the purpose of educating the public about living with black bears.

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

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**White-tailed Deer** (*Odocoileus virginianus*)

**Results:** Commission and Forest Service biologists have been cooperatively monitoring this species for many years on all three forests. Track count transects are being used routinely to obtain indications of trends. Due to personnel constraints, the FWC has been unable to collect track data on the Apalachicola National Forest since 2004.

**Table 30.**  
**Track Count Monitoring – White-tailed Deer**  
**Tracks/mile**

Year	Apalachicola RD	Wakulla RD	Ocala NF	Osceola NF
1992	3.81	7.63	13.6	5.5
1993	2.80	5.72	13.5	4.5
1994	3.11	3.98	14.8	ND
1995	3.10	5.23	13.8	4.1
1996	3.84	4.91	15.4	4.4
1997	6.11	5.08	12.8	6.0
1998	4.90	8.80	10.8	2.5
1999	4.20	8.50	10.5	2.3
2000	3.6	7.4	11.7	4.4
2001	3.6	7.6	10.8	2.9
2002	2.7	9.0	9.6	9.4
2003	2.2	13.2	9.5	7.2
2004	2.2	7.8	ND	6.4
2005	NA	NA	11.1	8.3/3.1**
2006	ND	ND	10.5	12.5/6.2**
2007	ND	ND	NA	7.6/3.8**
2008	ND	ND	10.21	14.5/7.5**

NA = Not Available

ND = No Data

\*\* = Still/Dog Hunt Areas

Although track densities are low, twelve years of data show a relatively stable trend for the Apalachicola and the Wakulla, Ocala, and an erratic, but generally increasing trend on the Osceola. Commission data show a drop in hunter harvest on the Ocala that appears to parallel the decline in the track count index. Reasons for these declines are unknown at this time.

**Evaluation:** The desired outcome is a stable to slightly increasing trend. Deer have remained on the landscape across the decades at varying levels, and a viable population is assured on all three national forests.

**Sand Skink** (*Neoseps reynoldsi*)

The sand skink occurs only on the Ocala National Forest and adjacent central Florida scrub habitats with loose, sandy soils.

**Results:** Sand skink monitoring using cover boards or at the permanent study sites has not been done since 2003 because of personnel constraints. Information reported here is based on data collections from previous years. Little is known about this species due to its fossorial habits. It is a difficult species to monitor, but there has been some success with detection using the cover board technique. Additionally, the forest biologist has maintained a database of incidental sightings of animals or sign since 1969. As a result of the Ocala NF's new access management planning, an intensive monitoring event was conducted on the Seminole RD in April, 2007. Approximately 10 biologists from the Forest Service, the US Fish and Wildlife Service and the

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Florida Wildlife Commission gathered to survey a large area of the District that has in the past and is expected to continue to receive significant OHV use (the area around Big Scrub Campground). No sand skinks were seen, but several of the “sine wave” tracks, characteristic of sand skinks, were noted, and we concluded that sand skinks were probably present in the area, but at very low densities.

**Table 31. Sand Skink Cover Board Detections - Ocala National Forest Active Boards or Buckets/Total Boards or Buckets**

Year	Lake George RD	Seminole RD
1992	0/302	0/0
1993	0/0	0/300
1994	0/0	0/0
1995	35/567	0/0
1996	38/461	9/40
1997	5/256	2/200
1998	30/344	0/0
1999	0/0	0/0
2000	20/40	19/20
2001	17/40	16/20
2002	0/0	6/20
2003	1/20	0/0
2004	ND	ND
2005	ND	ND
2006	ND	ND
2007	ND	ND
2008	ND	ND

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**Table 32.**  
**Sand Skink Densities at Study Sites - Ocala National Forest**

Year	Lake George RD	Seminole RD
1995	29/acre	No count
1996	14-24/acre	16/acre
1997	3/acre	No count
1998	31-111/acre	No count
2000	25-43/acre	68/acre
2001	No count	No count
2002	No count	No count
2003	No count	No count
2004	“ “	“ “
2005	“ “	“ “
2006	“ “	“ “
2007	“ “	“ “
2008	“ “	“ “

**Evaluation:** The current monitoring program for sand skink has shown presence of the species in a variety of scrub habitats, but there does not seem to be any conclusive correlation of sand skink population trends and management practices. They require loose, sandy soils on partially open sites. Intuitively, any activities which compact the soil or allow the vegetation to become too thick (both above ground and below ground) would be detrimental to sand skinks. Due to the difficulty of monitoring and an even greater difficulty in making any solid conclusions based on what little data the District has gathered, this species should be removed as a Management Indicator species at the next Forest Plan revision.

**Largemouth Bass (*Micropterus salmoides*)**

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

A largemouth bass monitoring program has been established on both types of water bodies to determine population trends and management effectiveness. These monitoring activities were designed to compare current conditions with a variety of available data. Lakes and ponds of the National Forests in Florida have been sampled with electrofishing equipment since the early 1980's. Data collected from these samples are summarized and analyzed to document trends in relative abundance and occurrence of largemouth bass size-classes.

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

On the Osceola National Forest, the number of samples without largemouth bass is the area of greatest concern. Two lakes on the Osceola, North Deerhole and Warmouth, did not support largemouth bass population before 2007. Warmouth Lake was enlarged and enhanced by deepening and since that time largemouth bass have been observed.

The number of samples without largemouth bass is also the greatest concern on the Ocala National Forest. Largemouth bass populations have never been observed in two of these lakes, Gobbler and Lawbreaker. The two lakes are often the most acid lakes sampled on the Ocala National Forest. Both have recorded pH measurement of 3.9. During periods of low water levels, several lakes were observed to have no YOY largemouth bass, but samples during higher water did indicate largemouth bass reproduction.

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

Trends observed in these data and concerns for future impacts of acidic precipitation must therefore be given serious consideration. Guidelines in the Forest Plan may not offer an opportunity to engage in proactive management necessary to protect the viability of largemouth bass in the natural lakes of these forests. As to whether or not the largemouth bass continues to serve as a viable MIS species should be considered at the next Forest Plan revision.

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

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

**Results:** This monitoring item is to be reported at five-year intervals according to the Forest Plan monitoring strategy. This information was first reported in the 2004 Five-Year Forest Plan Monitoring Report. This section will be reported on in the 2009 M&E Report.

#### **Forest Plan Objective:**

- Provide habitat capability to support an increasing population of red-cockaded woodpeckers (RCWs). The 10-year population objectives are 500 active clusters on the Apalachicola habitat management area (HMA), 250 active clusters on the Wakulla HMA, 151 active clusters on the Osceola HMA, 32 active clusters on the Island HMA, and 12 active clusters on the Paisley HMA. The long-term objectives are 500 active clusters on the Apalachicola HMA, 506 active clusters on the Wakulla HMA, 457 active clusters on the Osceola HMA, 67 active clusters on the Island HMA and 81 active clusters on the

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Paisley HMA. The objective for the designated recovery populations (Apalachicola Ranger District and Osceola NF) is to have at least 250 breeding pairs fledging young annually. In unrecovered populations, recruitment clusters should equal approximately 10 percent of active clusters, depending on population demographics.

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

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

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

Since 1994, the Osceola RCW population has increased from 45 clusters through a combination of artificial cavity installation, internal translocation, and prescribed burning. In 1999, the forest entered into a challenge cost share project with Tall Timbers Research station to update its RCW geographic information system (GIS) layer. Every known active and inactive cavity tree was precisely located with geographic positioning system (GPS) equipment. During 2000, extensive monitoring was accomplished in preparation for translocation, and it was found that eggs were laid at 57 clusters. One-hundred-three nestlings were banded that field season. One male and two female fledglings were translocated within the population to help increase the number of active clusters. Due to wildlife staff vacancies, complete monitoring of RCW cavity trees and cluster status was not accomplished between 2000 and 2002. In 2003, the Osceola accomplished a complete tree status check of all known RCW clusters and re-GPS'ed all known active and inactive cavity trees. The District has made great efforts to keep the data base up to date since that time. The District currently has 112 active clusters (July, 2008) and manages a total of 135 clusters.

The Apalachicola National Forest contains two populations; the Wakulla and Apalachicola. The latter is the only recovered population of the species with 489 known active clusters. The Apalachicola population annually provides fledglings for translocation to other populations in Florida, Georgia, Mississippi, and Alabama to help enhance their recovery. In 2008, 370 nestlings were banded and 43 fledglings were translocated to other populations. The Apalachicola population has remained stable since the early 1990s.

The Wakulla population currently contains 140 known active clusters. Although this represents a decline of approximately 7% from the 150 active clusters known in 1995 and 25% from the 186 known in 1991, it represents an increase of 10 clusters over 2006. The reason for the long term decline is complicated, but is most likely due to a lack of large trees and regular burning in the flatwoods portion of the District. In the sandhills portion of the District, the population has been increasing. From a low of 2 clusters in 1993, the sandhills population has increased to 23 active clusters. In the early spring of 2004, the Forest worked with the USFWS RCW Recovery Coordinator to develop a more detailed Plan of Work that we hope will give us a better indication of what may be causing the decline. In 2005, Forest Service employees inspected each of the Wakulla clusters to ensure they each contained 4 suitable cavities. To date, this population is not providing fledglings for the translocation effort. However, 65 chicks on the Wakulla District were banded during the 2008 banding season and with an increase in prescribe burning, we expect growth from the population into the future.

The Ocala population is the smallest of the four populations on the National Forests in Florida. In 1996 they were down to 10 active clusters. By 2001 there were 30 active clusters. Nine clusters had single birds for at least part of the year, and 17 of 21 (81%) potential breeding pairs nested. A record high of 31 fledglings was produced, of which 13 were banded as nestlings. By contrast, in 2008, the Forest had 65 active clusters; 58 considered Potential Breeding Groups (PBG). This

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population has benefited significantly from translocations from the Apalachicola. Prescribed burning to improve habitat and artificial cavity installation and translocation are all being used to enhance this population. Table 33 shows the trends in active clusters of the four RCW populations on the National Forests in Florida.

**Table 33. Red-cockaded Woodpeckers – Active Clusters**

Year	Apalachicola RD	Wakulla RD	Osceola NF	Ocala NF
1991	503	186	44	12
1992	503	182	43	11
1993	494	150	43	13
1994	500	Incomplete	45	10
1995	504	150	51	15
1996	504	154	53	10
1997	505	157	51	10
1998	505	125	Incomplete	13
1999	486	125	66	18
2000	486	138	Incomplete	22
2001	488	140	Incomplete	30
2002	486	140	Incomplete	29
2003	485	134	77	37
2004	473	137	84	44
2005	473	104	88	53
2006	489	120	91	53
2007	494	130	100	55
2008	513*	140	112	65

\* The Apalachicola District's number of active clusters (513) is comprised of a 40% survey of the population annually, with 1/3 of the remaining population surveyed annually. Thus 60% of the District's population is surveyed annually with the remaining 40% survey data being less than 3 years old.

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

The Apalachicola population is relatively stable, the Wakulla has shown a gradual increase, and the Osceola and Ocala populations are increasing. The steady increase since 1997 on the Ocala is in part due to translocations of young birds from the Apalachicola RD. The number of active clusters on the Ocala has nearly tripled since 1999, but non-paired birds occupy 30% of those clusters.

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

**1.4 Monitoring Question: What are the effects of the reduced foraging standards on the Apalachicola National Forest? QUESTION REMOVED BY AMENDMENT #3**

Forest Plan Objective:

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

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

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

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

Because prescribed fire is so difficult to control in scrub, and because of smoke management issues, timber harvest is the primary management tool for maintaining scrub-jay habitat on the Ocala National Forest. Clear-cutting of mature sand pine regenerates the scrub habitat necessary for the jay. The resulting scrub is generally suitable for nesting for 10 - 12 years. By this time the scrub is typically overtopped by young sand pine, rendering the site unsuitable for the jays. A regular cycle of sand pine regeneration is being employed to maintain the jays across the scrub on the Ocala National Forest. At the end of FY 2000, there were 62,627 acres of sand pine scrub in the 3-15 year old age class. The latest data we have available (Fall, 2008) indicates that we currently have about 41,584 acres of 3-15 year old sand pine scrub on the Ocala, however scrub older than about 12 years does not receive significant FSJ use. The actual acreage of effective FSJ habitat (3 – 12 years old) is approximately 31,126 acres.

Forest wide monitoring for numbers of clans (family groups) and individual birds has been done since 1994. In the past, the Ocala National Forest surveyed approximately 25% of suitable habitat per year by playing a scrub jay call tape and recording number of birds seen per site. An experienced observer interprets the number of groups based on the birds' behavior. New records are added to the Active List and formerly recorded sites are moved to historical status based on survey results. Results are shown in the following table. Demographic monitoring by Dr. Kay Franzreb of the Forest Service's Southern Research Station began in November 2000 and continued through 2005. It was taken over at that time by personnel from the Ocala National Forest.

In recent years, concerns have risen regarding the accuracy of previous Florida Scrub-Jay (FSJ) surveys which involved playing a recorded scrub-jay call and counting the number of birds per site. Observers have noted that scrub-jays from nearby non-target forest stands often responded to broadcasted calls and occasionally followed observers from one survey point to another. This can cause errors in occupancy data and overestimates in abundance. Another problem with surveying scrub-jays is that the ability to detect a scrub-jay when one is present (referred to as detectability) decreases as habitat gets older. This dynamic nature of FSJ ecology creates difficulties in gathering survey data that are relevant to monitoring questions.

Thus an effort arose to pursue a new Florida Scrub-Jay monitoring protocol whose goal would be to efficiently and accurately assess FSJ occupancy and abundance by taking the above challenges into account and ultimately provide population trend information. In late 2007, we met with Fred Johnson, a US Geological Survey population statistician with Florida Scrub-Jay survey design experience. Mr. Johnson agreed to assist the US Forest Service by devising a new monitoring plan.

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Pilot surveys were conducted in March 2008 (pre-breeding) and July 2008 (post-breeding). Pre-breeding surveys focused on evaluating occupancy rates for stands that were 11-15 years old and greater than 100 meters away from a stand less than ten years old (to avoid accidentally detecting a bird from a nearby stand). Post-breeding surveys were conducted to further refine survey techniques based on pre-breeding surveys.

Evaluation: Pre-breeding surveys were conducted in 76 stands using a variation of the old broadcast survey method. Results showed low occupancy (15%) in 11-15 year-old stands. Jays, when present, were detected about 85% of the time. While jays were previously known to occupy 11-15 year-old habitat, anecdotal evidence from years prior suggested occupancy rates in such habitat were lower than previous surveys indicated. Based on the low occupancy results, a decision was made to focus the second round of pilot surveys on habitat 0-10 years old in order to more efficiently refine survey technique.

Two hundred post-breeding points were surveyed in 0-10 year-old stands using a survey method in which no calls were played except for a 3-minute period after a series of “silent” survey periods. Rangefinder binoculars were also used to record the distance any observed birds were from observers. Detectability in the younger stands over a survey period (without using a call) was 60%, and occupancy was 33% across all surveyed sites. Occupancy results are relatively low due to the fact that many stands surveyed were younger than the age jays typically begin establishing territories.

Further analysis is underway to apply collected distance data from the rangefinder binoculars to results and to continue refining a survey technique that will be relevant and applicable. Discussions are also underway with partners to potentially explore the relationship between scrub-jay demography and certain habitat attributes such as opening size and sand pine density. While we do not have the resources to replicate the in-depth demographic studies that have been done on other large populations, small-scale examination of certain relationships in conjunction with an effective new survey method will help establish more confident answers to monitoring questions, thus the lack of estimated group and individual numbers for 2008 in Table 34.

**Table 34.**  
**Ocala National Forest Scrub Jays**  
**Groups/birds**

<b>Year</b>	<b>Lake George RD</b>	<b>Seminole RD</b>
<b>1994</b>	454/no count	245/no count
<b>1995</b>	460/1313	247/694
<b>1996</b>	466/1398	249/693
<b>1997</b>	468/1336	259/774
<b>1998</b>	473/893	272/799
<b>1999</b>	333/893	413/1050
<b>2000</b>	351/1020	412/1048
<b>2001</b>	384/1120	401/969
<b>2002</b>	421/1258	394/955
<b>2003</b>	425/1251	355/881
<b>2004</b>	426/1253	354/868
<b>2005</b>	790/2,136**	
<b>2006</b>	786/2,129	
<b>2007</b>	803/2,313	
<b>2008</b>	NA	

\*\*Due to an administrative consolidation, the 2 Districts will be reported as a single unit from 2005 forward.

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**Evaluation:** In the ten years from 1994 to 2004 the number of groups increased from 707 to 780 (10%). Data from the 2005 and 2006 surveys show that the increase is continuing. Numbers for 2005 through 2007 show a very slight increase. The 10-year population objective in the Forest plan is to maintain a population between 742 to 907 groups. This objective is being met.

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

An in-depth analysis was conducted on the Seminole Ranger District. Several scenarios were modeled using varying timber harvest rates and including scrub jay habitat in management areas unsuitable for commercial timber production. Given the 5% standard, scrub jay habitat on the Seminole Ranger District levels off at about 19,000 acres. Since the Seminole represents about 43% of the total scrub acres on the Ocala, the District would be expected to provide 43% of the suitable habitat objective, or 19,350 acres – slightly more than the acreage actually available. This scenario is based on the assumption that burning and other disturbances occur as planned in the areas unsuitable for timber production. That said the Ocala NF plans to increase their sand pine harvest upwards to 4,000 acres per year in the next several years. This ramp-up in the program will certainly ensure a stable to increasing population of the Florida scrub-jay.

### Forest Plan Objective:

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

**Forest Plan Goal 9,** Manage for habitat conditions to recover and sustain viable populations of all native species, with special emphasis on rare species.

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

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

#### Results and Evaluation:

#### Birds

##### Endangered

*Mycteria americana*/Wood Stork

*Picoides borealis*/Red-cockaded Woodpecker

##### Threatened

*Aphelocoma coerulescens*/Florida Scrub-Jay

*Haliaeetus leucocephalus*/Bald Eagle

##### Sensitive

*Aimophila aestivalis*/Bachman's Sparrow

*Grus canadensis pratensis*/Florida Sandhill Crane

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

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

A wood stork rookery has been documented in the SW portion of the Osceola NF, south of I-10. The extended drought since 1998, however, has confounded efforts to determine trends for the species on the forest. On 4/15/04, it was found that this rookery had recently been reactivated, with 25 birds in residence. We do not yet have any data on active nests at this site. To our knowledge, this rookery was not active from 2005 - 2007. Nesting has yet to be documented on either the Ocala or Apalachicola NFs, although they show up in low numbers on the Apalachicola BBS routes.

**Bachman's Sparrow** populations have declined range wide in recent decades. It favors open pine stands with grasses and scattered shrubs, oaks, or other hardwoods. Maintenance of old growth longleaf with 20-25 foot spacing between trees, and thinning benefits this species as well as the red-cockaded woodpecker. Nesting requirements include dense herbaceous cover interspersed with, or bordered by, shrubs and trees. Forested areas burned between the months of April and August will benefit this bird, by stimulating an increase in herbaceous vegetation. Habitat management done under the auspices of the Upland Ecosystem Restoration Project (UERP), as discussed in the section on northern bobwhite quail will be a great benefit to Bachman's sparrow and other grassland species.

Data from the various BBS routes on the Apalachicola NF; the Ft. Gadsden BBS route, in the southwest corner, the Bloxham route in the north-central portion of the Forest, the Apalachicola route through the central and western portions of the Forest, and the Alligator Point route in the southeastern corner of the Forest all suggest slightly different trend information. Combining of the data shows that while the number of birds seen annually is quite variable, the trend from 1995 through 2005 is declining slightly, with numbers up again in 2008.

**Table 35.**  
**BBS Route summary, 1995 - 2008 for Bachman's Sparrow,**  
**Apalachicola NF.**

<b>Year</b>	<b>Number of Birds</b>
1995	31
1996	17
1997	22
1998	25
1999	38
2000	29
2001	17
2002	30
2003	17
2004	11
2005	10
2006	29
2007	31
2008	38

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

**Table 36.**  
**Apalachicola NF**  
**Bachman's Sparrow – R8 Bird Points**

Year	Total Birds	Points Sampled	Birds/Point
2000	21	30	0.7
2001	43	30	1.43
2002	37	60	0.62
2003	62	60	1.03
2004	32	60	0.53
2005	59	60	0.98
2006	62	60	1.03
2007	44	60	0.73
2008	39	60	0.65

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

**Table 37.**  
**BBS Route summary, 1995 - 2008 for Bachman's Sparrow,**  
**Osceola NF.**

Year	Number of Birds	Year	Number of Birds
1995	17	2002	20
1996	0	2003	17
1997	3	2004	8
1998	2	2005	7
1999	2	2006	7
2000	15	2007	11
2001	0	2008	5

The Ocala BBS data are not applicable as an index for Bachman's sparrow because suitable habitat is not well represented on this route. R8Bird point data show Bachman's sparrow to be the second most common species in the Ocala National Forest's longleaf pine sandhills habitat. An average of 1.01 Bachman's sparrows per point were recorded from the 80 points monitored on the Ocala between 1997 and 2008. Assuming 2 acres per point, and assuming that for every singing male heard or seen there is a non-singing female nearby, the population index averages 118 birds per 100 acres of suitable habitat.

**Table 38.**  
**Bachman’s Sparrow at R8Bird Longleaf Points, Ocala National Forest**  
**Birds Per Point**

Year	Lake George RD	Seminole RD
	Riverside Island	Paisley Woods
1997	.85	1.5
1998	1.65	1.6
1999	2.15	2.45
2000	2.55	1.45
2001	2.9	1.1
2002	2.9	0.93
2003	1.5	0.7
2004	0.75	0.38
2005	1.0	0.7
2006	0.85	0.68
2007	1.1	0.98
2008	0.375	1.375

Breeding Bird Surveys throughout the southeast indicate a stable to declining survey-wide trend (-2.0 percent average annual change from 1966-2004; 95% confidence intervals: -4.9 to +1.0 percent). The species is of concern because of a loss of fire-maintained habitats due to fire suppression and land-use conversion.

Population trends for the Bachman’s sparrow were estimated in four physiographic areas and in six National Forests. Based on trend estimates and 90% confidence intervals where zero was excluded, there was evidence that the number of Bachman’s sparrows remained consistent on National Forests in the Southern Region as a whole, increased on National Forests in one physiographic area, and increased in one and decreased in two individual National Forests, one of which was Florida (LaSorte, et al. 2007).

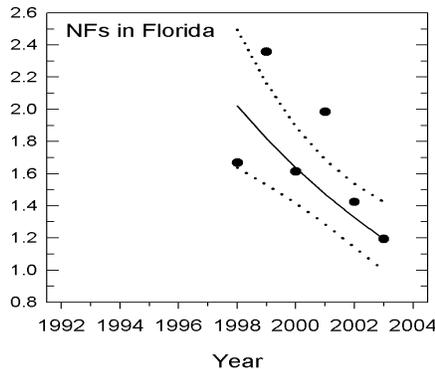


Figure 4. Bachman’s sparrows per R8 Bird sample point, 1998 through 2004. LaSorte, et al. (2007)

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

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

**Table 39.**  
**Sandhill Crane at R8Bird Points - Ocala National Forest**  
**Birds Counted**

Year	Lake George RD Riverside Island
1997	2
1998	3
1999	6
2000	6
2001	7
2002	2
2003	2
2004	2
2005	3
2006	2
2007	4
2008	15

**Fish**

**Threatened**

*Acipenser oxyrinchus desotoi*/Gulf Sturgeon

**Sensitive**

*Acipenser oxyrinchus oxyrinchus*/Atlantic Sturgeon (added to list effective 01/01/2002)

*Alosa alabamae*/Alabama Shad (added to list effective 01/01/2002)

*Ameiurus serracanthus*/Spotted bullhead (added to list effective 01/01/2002)

*Cyprinella leedsii*/Bannerfin Shiner (dropped from list effective 01/01/2002)

*Micropterus notius*/Suwannee Bass

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

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both the Apalachicola and Ochlockonee river systems prevent sturgeon from reaching historical spawning sites.

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

The **Atlantic Sturgeon** lives in the Atlantic Ocean from Florida to Labrador, Canada. The Atlantic sturgeon makes long migrations, moving south to Florida in the winter. It has been collected from the St. Johns River in Putnam County. It "may have bred in the St. Johns River drainage at one time, although this has never been proven. In any event, reproduction almost certainly does not occur there today" (*Gilbert, C. R. (ed.) 1992. Fishes. Volume II in Ashton, R. (series ed.) Rare and Endangered Biota of Florida. University Presses of Florida. Gainesville, FL 247pp. ).*

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

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

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

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on this species will be obtained from the Florida Fish and Wildlife Conservation Commission and the US Fish and Wildlife Service.

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

Reproduction, including nest construction, is similar to largemouth bass. Degradation of water quality or habitat in the Suwannee and Ochlockonee rivers could threaten this species. As with mussels, watershed impacts related to agriculture, urbanization, and water management outside National Forest lands will have the definitive impacts on this species. No effects are to be expected from Forest Service activities.

### Reptiles

#### Threatened

***Alligator mississippiensis*/American Alligator**  
***Drymarchon corais couperii*/Eastern Indigo Snake**  
***Neoseps reynoldsi*/Sand Skink**

#### Sensitive

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

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

Historically, alligators were depleted from many parts of their range because of market hunting and loss of habitat, and 30 years ago many people believed this unique reptile would never recover. In 1967, the alligator was listed as an endangered species (under a law that preceded the Endangered Species Act of 1973), meaning it was considered in danger of extinction throughout all or a significant portion of its range. A combined effort by the U.S. Fish and Wildlife Service and state wildlife agencies in the South saved these unique animals. The Endangered Species Act prohibited alligator hunting, allowing the species to rebound in numbers in many areas where it had been depleted. As the alligator began to make a comeback, states established alligator population monitoring programs and used this information to ensure alligator numbers continued to increase. In 1987, the U.S. Fish and Wildlife Service pronounced the American alligator fully recovered and consequently removed it from the list of endangered species. Although the American alligator is secure, some related animals, such as several species of crocodiles and caimans are still in trouble. For this reason, the U.S. Fish and Wildlife Service has listed American alligators as "Threatened because of similarity of appearance", and still regulates the legal trade in alligator skins, or products made from them, in order to protect endangered species that have skin similar in appearance to alligators. The FWC permits alligator harvest in selected areas around the state, and the Ocala Wildlife Management Area (WMA) is the only area currently permitted on the National Forests in Florida. Records of alligator harvest are available from FWC.

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**Table 40.**  
**Alligator harvest, Ocala WMA**

Year	Harvest Quota	Harvest
1997	5	4
1998	5	1
1999	5	3
2000	4	4
2001	ND	2
2002	ND	3
2003	ND	3
2004	4	2
2005	ND	2
2006	ND	3
2007	ND	4
2008	ND	ND

Based upon the alligator's current status, it is assured a continual opportunity for growth in the National Forests in Florida.

The **Eastern Indigo Snake** is a large, docile, nonpoisonous snake growing to a maximum length of about 8 feet, making the longest native snake species in North America. This species is currently known to occur throughout Florida and in the coastal plain of Georgia. Historically, the range also included southern Alabama, southern Mississippi, and the extreme southeastern portion of South Carolina.

The indigo snake seems to be strongly associated with high, dry, well-drained sandy soils, closely paralleling the sandhill habitat preferred by the gopher tortoise. During warmer months, indigo snakes also frequent streams and swamps, and some occasionally are found in flatwoods. Gopher tortoise burrows and other subterranean cavities are commonly used as dens and for egg laying. Eastern indigo snake habitat exists on the Apalachicola, Ocala, and Osceola NFs. Local herpetologists feel that indigos are still present in low numbers on all three forests, but until 2005, no sign of the species had been found on any of the three Forests since a 1998 sighting on the Osceola. In January, 2005, a snake was observed by a Forest Service employee on a road through the scrub, and in February, 2005, a road killed snake was found in a scrub-longleaf ecotonal habitat. In April of 2007, two indigo snakes were seen in the area of a private home adjacent to the Forest near Lake Kerr. We are aware of no sampling method that would help us detect a species that occurs at such low densities, so we are reliant on incidental sightings reported by employees or other friends of the Forests. The Ocala Forest Biologist maintains a database of indigo snake sightings dating back to 1948. The decline of the species is attributed to a loss of habitat due to land uses such as construction, farming, forestry, pasture and to over collecting for the pet trade. The snake's large size and docile nature have made it much sought after as a pet. The negative effect of "Rattlesnake Roundups" on the indigo snake is unquantifiable, but researchers agree that it is real. Both indigo snakes and rattlesnakes utilize the burrows of gopher tortoises at certain times. Rattlesnake hunters often pour gasoline down these burrows to drive out the snakes. While some indigo snakes may be killed by this practice, the actual degree of impact on the population is unknown.

The Apalachicola National Forest was awarded a \$200,000 grant from the National Fish and Wildlife Foundation to which Project Orianna will assist the Forest with possible habitat conservation, land management and restoration, captive breeding and propagation, and snake inventory and monitoring. Additional information will be available in the 2009 Monitoring and Evaluation Report.

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The **Sand Skink** is discussed in the Management Indicator Species section of this report.

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

There is currently no forest-wide trend information for any of the forests, but revised Forest Plan Standards and Guidelines provide for tortoise protection. Standards WL-10, 11 & 12 provide for burrow protection and safe movement of individuals away from possible harm from management activities. An amendment to the LMP is currently (07/08) being prepared that will bring Plan direction in line with the FWC's newly approved Gopher Tortoise Management Plan. The Forests are approved (by the FWC) recipient sites for gopher tortoises translocated from a variety of private land development sites. We have developed a translocation monitoring protocol to which potential applicants must adhere if they want to move tortoises to the forest. The Forests recently signed an MOU with the St. Joe Land Co. under which we will accept relocated tortoises from some St. Joe developments. The MOU also incorporates a research component. The continuation of current management practices, such as, thinning and prescribe burning should ensure population growth aside from extraneous translocations to the recipient sites.

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

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

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

The **Suwannee Cooter** is a river turtle. In Florida, the river cooters are restricted to rivers, spring runs, and associated backwaters and impoundments that drain into the Gulf of Mexico. They are herbivorous, feeding principally on aquatic vegetation. They rarely venture onto land except to nest -- a behavior that probably takes place within a relatively short distance of the water (hundreds of yards). Most nesting occurs from April through early August. *Pseudemys*

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*concinna suwanniensis* is a subspecies found from the Tampa Bay region northwestward to the Apalachicola River, and has been confirmed in Leon, Wakulla, Franklin, and Liberty counties.

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

The **Florida Scrub Lizard** is found on the Ocala NF with a few records adjacent to the northern and southern borders of the Ocala NF. It prefers open sandy areas bordering sand pine scrub and sandhill associations, and could be described as a forest edge species. Habitat loss is the biggest threat to the scrub lizard. Scrub-jay management and sand pine management as prescribed in the Forest Plan will sustain forest edge in sand pine habitats on the Ocala. There is no forest wide population and trend data on this species, though several studies have been done in the Ocala National Forest that determined scrub lizard population densities under varying habitat conditions. Not surprisingly, the highest population densities are found in areas of open sand pine scrub with a high degree of sandy edge habitat.

Little is known of the life history and ecology of the **Short-tailed Snake**. It is a burrower, seldom seen above ground except in the spring and fall (April and October). It is restricted chiefly to long-leaf pine – turkey oak associations, but is occasionally found in sand pine scrub. Its original range appears to include only the Ocala NF, which contains one of the largest remaining blocks of appropriate habitat. The Ocala Forest Biologist maintains records on short-tail snake observations. Her database has records dating from 1974, and the last record she has was April, 2004. Management Objectives and Standards and Guidelines for the red-cockaded woodpecker in the Forest Plan will also provide protection for this species. There is no forest wide population and trend data on this species.

### **Amphibians**

#### **Threatened**

***Ambystoma cingulatum*/Flatwoods Salamander**

#### **Sensitive**

***Amphiuma pholeter*/One-toed Amphiuma (added to list effective 01/01/2002)**

***Desmognathus apalachicola*/Apalachicola Dusky Salamander (added 01/01/2002)**

***Notophthalmus perstriatus*/Striped Newt**

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

The flatwoods salamander is found in the Apalachicola National Forest and in one compartment on the Osceola National Forest. The known breeding ponds on the Apalachicola National Forest are in the Apalachicola Savannahs land-type association. The Apalachicola National Forest

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

There is some concern that prescribed burning may have a lower tendency to burn through temporary ponds than does natural wildfire. It is possible that failure to reduce the duff layer in ponds may slowly reduce reproductive habitat for flatwoods salamanders. Extensive surveys for the flatwoods salamander have only been possible occasionally since Florida's extended drought began in 1998, because most breeding ponds have been dry. Because the species has only been found in a single location on the Osceola NF there are viability concerns for that population, however, the metapopulation on the Apalachicola is secure. The US Fish and Wildlife Service is in the process of finalizing Critical Habitat designation for this species. Although this designation will provide additional protection for the flatwoods salamander, it won't require significant change in National Forest management, other than the placement of log landing and other timber related activities.

The US Fish and Wildlife Service finalized the Critical Habitat designation for this species on the ANF and the Osceola NF. Furthermore, the USFWS made a new species determination differentiating the Frosted flatwoods salamander from the Reticulated flatwoods salamander and designated critical habitat for both species. There is however no critical habitat for the reticulated flatwoods salamander on the ANF. A record of this was posted in the Federal Register on February 10, 2009. Although this designation will provide additional protection for the Frosted flatwoods salamanders, it won't require significant change in National Forest management, other than the placement of log landing and other timber related activities.

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

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

The **Striped Newt** is rare and localized in occurrence. They breed in isolated ponds in flatwoods, longleaf pine sandhills, and sand pine scrub habitats. Recent surveys have located only 32 breeding ponds in the entire geographic range of the striped newt - 17 of which are on the Apalachicola National Forest. All of the known breeding ponds on the Apalachicola National Forest are in the Munson Sandhills. Temporary ponds were being degraded by mud bogging throughout the urban interface zone, which includes all of the Munson Sandhills. A large area was closed to vehicular traffic in 2003 because of the damage being caused by mud bogging. The adult (eft stage) newts travel into the uplands surrounding the breeding ponds. Almost nothing is known about their biology in the uplands except they may travel considerable distances (at least half a mile and perhaps up to a mile and a quarter). A striped newt survey of 132 ponds in the Ocala National Forest in 1993 confirmed the striped newt in only one pond near Lake Delancy. The newts were neotenic (adults remained aquatic instead of metamorphosing to the terrestrial form). However, a 13-year study of 8 ponds in Norwalk and Salt Springs Islands by Dr. Katie Greenberg of the Southeastern Research Station confirmed newts in all 8 ponds. This study showed that newts may occur in any isolated pond in suitable habitat, but that several years of monitoring may be needed to catch the cyclical and eruptive pattern of newt reproduction

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(Table 41). This study confirmed the presence of terrestrial efts in the Ocala National Forest population, which was previously assumed entirely neotenic.

**Table 41.**  
**Ocala NF Pond Monitoring**  
**Number of ponds with records, Total number captured**

Year	Striped Newts	Gopher Frogs	Round-tailed Muskrat	Scrub Lizard
1994	4, 15	7, 46	4, 6	ND
1995	4, 4	8, 441	2, 4	ND
1996	4, 10	8, 240	0, 0	ND
1997	6, 94	7, 58	3, 3	ND
1998	7, 777	8, 655	0, 0	ND
1999	8, 876	4, 8	3, 3	ND
2000	7, 264	5, 7	1, 1	ND
2001	6, 101	7, 33	1, 1	ND
2002	8,37	8,89	1,1	5,9
2003	1,13	8,107	0,0	ND
2004	3,33	6,72	3,4	3,5
2005	1,3	5,216	0	1,1
2006	NA,88	NA,187	NA,1	NA,4
2007	NA,62	NA,12	NA,0	NA,5
2008	2, 27	NA	NA	NA

**Mammals**

**Endangered**

*Felis concolor coryii*/Florida Panther

*Myotis grisescens*/Gray Bat

*Trichechus manatus latirostris*/Florida Manatee or West Indian Manatee

**Sensitive**

*Corynorhinus rafinesquii*/Rafinesque's Big-eared Bat (added to list effective 01/01/2002)

*Neofiber alleni*/Round-tailed Muskrat

*Podomys floridanus*/Florida Mouse

*Sciurus niger shermani*/Sherman's Fox Squirrel

*Ursus americanus floridanus*/Florida Black Bear

The **Florida Panther** is a large, long-tailed felid with a great deal of color variation: pale brown or rusty upper parts; dull white or buffy under parts; and tail tip, back of ears, and sides of nose are dark brown or blackish. The only known self-sustaining population occurs in south Florida, generally within the Big Cypress Swamp physiographic region and centered in Collier and Hendry Counties. Currently, the wild population is estimated at 100 adult animals.

In general, panther population centers are in large remote tracts with adequate prey, cover, and reduced levels of disturbance. There are currently no known Florida panthers using National Forest lands. The Apalachicola and Osceola NFs are potential reintroduction sites (Thatcher et al. 2006). The Osceola was used in the mid-1990's as a reintroduction test site when sterile western cougars were released to test the possibility of future releases of Florida panthers.

Populations of **Gray Bats** are found mainly in Alabama, northern Arkansas, Kentucky, Missouri, and Tennessee, but a few occur in northwestern Florida, western Georgia, southwestern Kansas, southern Indiana, southern and southwestern Illinois, northeastern Mississippi, northeastern

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Oklahoma, western Virginia, and possibly western North Carolina. Distribution within the range is always patchy, but fragmentation and isolation of populations has been a problem during the past three decades. The gray bat population was estimated to be about 2.25 million in 1970; however, in 1976 a census of 22 important colonies in Alabama and Tennessee revealed an average decline of more than 50 percent. Due to protective measures taken at high-priority colony sites in the late 1970s and throughout the 1980s, the declines have been arrested at some major sites. Despite those measures, a recent discovery of White-nose syndrome among the Gray bat has caused alarm among bat biologists as to the severity of the syndrome. It is expected that this syndrome may cause mortality in thousands of Gray bats and could spread to other species. More research is being conducted to try and analyze the source as well as treat and eradicate the syndrome, ultimately protecting the species from further degradation.

Gray bat colonies are restricted entirely to caves or cavelike habitats. Nine known caves are believed to house about 95 percent of the hibernating population. There are no caves on the National Forests in Florida that could provide the conditions required by gray bats for roosting and breeding habitat. Gray bats occasionally may occur over the forests during migration or foraging.

The **Florida Manatee**, or West Indian Manatee, is a large gray or brown aquatic mammal. Although primarily herbivorous, they will occasionally feed on fish. Manatees may spend about 5 hours a day feeding and may consume 4 to 9 percent of their body weight a day.

During the winter months, the manatee population in the United States confines itself to the coastal waters of the southern half of peninsular Florida and to springs and warm-water outfalls as far north as southeast Georgia. Manatees also winter in the St. Johns River near Blue Spring State Park. During summer months, they may migrate as far north as coastal Virginia on the east coast and the Louisiana coast on the Gulf of Mexico. Manatee populations also exist outside the continental United States in coastal areas of the Caribbean and Central and South America

Silver Glen Springs from its point of origin to its confluence with Lake George and Lake George itself are the only areas of habitat with known use in the forests. The manatee population was probably more abundant in the 18th or 19th century than today. Initial population decreases probably resulted from over harvesting for meat, oil, and leather. Today, hunting is prohibited and is not considered a problem; although there is an occasional poaching incidence. However, heavy mortality does occur from accidental collisions with boats and barges and from canal lock operations. Manatee population trends are poorly known, but deaths have increased steadily. The combination of high mortality rates and low reproductive rates has led to serious doubts about the species' ability to survive in the United States. Another closely related factor in the decline has been the loss of suitable habitat through incompatible coastal development, particularly destruction of sea grass beds by boating facilities. Silver Glen Springs provide essential warm water the manatees needs to over-winter within that spring. The Forest Service is actively pursuing ways to improve the Silver Glen Springs by regulating the amount of boater traffic thru seasonal restrictions and other strategies, however these are not likely to materialize until the 2010 calendar year.

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

The **Round-tailed Muskrat** is restricted to Florida and southeastern Georgia. Shallow marshes with emergent vegetation constitute preferred habitat. The best habitat on the NFs in Florida likely occurs in the wet prairies on the Ocala NF. The muskrat has been confirmed in Franklin, Leon, Marion and Wakulla counties (encompassing portions of the Apalachicola and Ocala NFs); and is likely in Baker, Columbia, Lake, and Liberty counties (encompassing portions of all three NFs in Florida). The extended drought has dried prairies in the Ocala National Forest that had round-tailed muskrat colonies about 10 years ago. The muskrat has persisted in creeks and

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streams, such as Juniper Creek, and has been recorded at small isolated ponds in sandhills habitat that are monitored for the striped newt and other amphibians. Muskrats have been recorded at 7 of the 8 sampled ponds, and in 9 of the 13 years included in the study. Because the muskrats were not trapped regularly, they were probably dispersing individuals or became trap-wise if resident. None of the ponds had the characteristic dome-shaped “muskrat house” that is formed of emergent wetland vegetation.

The known range of the **Florida Mouse** includes the northern two-thirds of the Florida peninsula and an isolated area near Carrabelle in Franklin County. This range encompasses portions of the Osceola and Ocala National Forests. There is no estimate of the statewide population, but the statewide trend is likely downwards due to habitat loss.

The mouse is restricted to fire maintained, dry, upland vegetation on deep sandy soils. The major habitats are scrub, including sand pine scrub and scrubby flatwoods, and sandhill. Scrub is the primary habitat. It has been confirmed in Marion and Lake counties (encompassing portions of the Ocala NF) and is likely in Columbia County (encompassing portions of the Osceola NF) (FNAI, 1997). Due to the abundance of preferred habitat, this species most likely occurs in the greatest numbers on the Ocala NF. The Florida mouse has also been captured during K.Greenberg’s Ocala Pond Study. Ten were captured in 2005 and 3 were captured in 2006. The deep sandy soils preferred by this species are not found on the Osceola NF.

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

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

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

### **Mollusks**

#### **Endangered**

***Ambla neislerii*/Fat Three-Ridge Mussel**

***Lampsilis subangulata*/Shiny-Rayed Pocketbook**

***Medionidus penicillatus*/Gulf Moccasinshell**

***Medionidus simpsonianus*/Ochlockonee Moccasinshell**

***Pleurobema pyriforme*/Oval Pigtoe**

#### **Threatened**

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

#### **Sensitive**

***Alasmidonta wrightiana*/Ochlockonee Arcmussel**

***Anodonta heardi*/Apalachicola Floater (added to sensitive list effective 01/01/2002)**

***Aphaostracon pycnus*/Dense Hydrobe**

***Cincinnatia vanhyningi*/Seminole Spring Siltsnail (added effective 01/01/2002)**

***Utterbackia peggiae*/Florida Floater (added to sensitive list effective 01/01/2002)**

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

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

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

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

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

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

### Crustaceans

#### Sensitive

***Crangonyx hobbsii*/Hobb's Cave Amphipod**

***Procambarus attiguus*/Silver Glen Spring Cave Crayfish (added to list effective 01/01/2002)**

***Procambarus delicatus*/Big-cheeked Cave Crayfish**

***Procambarus orcinus*/Woodville Cave Crayfish**

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

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

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

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

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

### **Insects**

#### **Sensitive**

***Atrytone arogos arogos*/Arogos skipper (added to sensitive list effective 01/01/2002)**

***Cordulegaster sayi*/Say's Dragonfly**

***Progomphus bellei*/Belle's Sand Clubtail**

***Somatochlora calverti*/Calvert's Emerald**

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

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

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

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

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

**Item to Measure:** Locations and numbers of PETS plant populations

**Results and Evaluation:** **Results:** Threatened and Endangered species which are also MIS are discussed under Monitoring Question 1.1. Many of the PETS plants on the National Forests in Florida are rare endemics and have become even rarer due to loss of habitat. Others were once more widely distributed, but have become rare due to loss of habitat. The

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habitat of most of these species depends upon frequent fire. Habitat loss has resulted from a combination of fire exclusion, mechanical disturbance, and conversion to pine plantations.

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

Most of the sensitive plants known or likely to occur on the National Forest in Florida are fire dependant components of wiregrass communities. A few are components of the scrub community on the Ocala National Forest. These species require similar habitat to threatened and endangered plants associated with these respective communities. Therefore, it is reasonable to assume that those activities that maintain or improve habitat for these federally listed plants will also serve to provide habitat for sensitive plants that occupy similar habitat. A few sensitive plants are associated with canopied wetlands and mesic hardwood forests. These areas are not considered suitable for timber production and are not significantly affected by USFS management activities.

### Forest Plan Goal:

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

### Forest Plan Objective:

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

**1.8 Monitoring Question:** What is the burn interval of upland pine acres? In what months have upland pine been burned?

**Items to Measure:** Acres of upland pine burned. Acres by month.

**Results:** Total Acres burned on the National Forests in Florida in the last 3 years are shown in Table 42a and broken down by individual forest in Table 42b.

**Table 42a.**  
**Acres Burned**

Year	Acres
2006	107,163
2007	141,731
2008	177,269
<b>Total</b>	<b>426,163</b>

Based on the upland pine Management Area 7.1 of 507,740 acres, 84% of the upland pine type was burned in the last 3 years.

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**Table 42b. 2008 Total acres burned for the National Forests in Florida by individual Forest**

Forest	Acres burned	Total Acres of Upland Pine Habitat (MA 7.1)
Apalachicola	112,280	375,311
Osceola	24,074	93,480
Ocala	40,907	35,792
<b>Total</b>	<b>177,269</b>	<b>504,583</b>

**Table 43.  
Percent Total Acres Burned by Month  
FY 2008**

Month	Percent
October	6.5
November	6.1
December	2.1
January	9.6
February	24.7
March	13.4
April	3.4
May	1.5
June	2.1
July	17.5
August	5.8
September	7.3
Total	100

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

FY 2008 saw a good year for prescribed fire accomplishments despite below average rainfall and drought conditions in some areas for the months of April, May, June and July. All the above criteria were met except average yearly acres. Average yearly acres (2006-2008) were 142,054 (95% of the goal). For 2008 21% of the total burned between May 1 and July 31. The Forest burned 51% of total acres in the period from March to September with 49% during the dormant season between October and February.

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

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

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

**Results:** A total of 58 miles of re-worked (plowed or bladed) prescribed fire firelines were installed during FY2008. Of this 34 miles were restored. Wildfire generated 32 miles of firelines, all of which were restored.

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**Evaluation:** In FY 2008 the Forest did minimize the use of plowed firelines and also optimized the use of alternative firelines to the extent possible. Minimization of firelines on wildfires during times of drought is more difficult due to changes in wildfire suppression tactics when lightning occurrences produce multiple ignitions being managed with limited resources or large project fires. During prescribed burning alternative firelines (swamp, foam, water, existing roads, disked lines) are used to the greatest extent possible, with the majority of prescribed burns bordering on roads, swamps or the Forest boundary.

### Forest Plan Objective:

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

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

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

**Results:** 5,335 acres have been restored to longleaf pine from off-site slash pine through the end of FY 2008. Through FY 2008, 1,298 acres of longleaf stands on the Osceola had slash pine removals.

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

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

**Item to Measure:** CISC report data on understory field

**Results:** The CISC database has been replaced by the FSveg database, which should allow for collection and storage of more detailed understory vegetation information. The purpose of this monitoring item is to ensure that data is collected in order to provide information for the next Plan revision.

**Evaluation:** At this time no additional understory species information has been collected. This is primarily due to the additional cost to collect this information and training required to complete it during routine silvicultural exams.

### Forest Plan Objective:

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

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

**Item to Measure:** Number of acres of thinning harvest offered.

**Results:** Through FY2008, 14,989 acres were offered for thinning purposes.

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

**Forest Plan Objective:**

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

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

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

**Results:** A total of 844 acres of off-site sand pine have been restored to longleaf pine through FY 2008.

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

**Forest Plan Objective:**

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

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

**Item to Measure:** Number of acres offered with uneven-aged harvest. Tree stem diameter and frequency, frequency of seed crops, longleaf pine regeneration establishment and survival, growth, and development of seedlings, pine midstory development and distribution, costs and return of implementation of harvesting, costs and effects of burning within harvest units, plant species frequency and distribution, PETS species population trends/habitat conditions, MIS plant/animal population trends/habitat conditions.

**Results:** Through FY 2008, 3,292 acres have been offered with uneven-aged management harvest methods. An evaluation of the effects of this harvest method is to be reported in five-year intervals. There were not any studies initiated in FY 2008; however, the requirements for this are known and recognized. Areas that may be suitable for this work are being surveyed, examined, and assessed for inclusion in future years work scheduling.

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**Evaluation:** While there is a need to provide regeneration of mature stands, the backlog of thinning needs as well as conflicts to provide an adequate number of large trees for RCWs has limited its use. In order to meet the objectives of the Forest Plan, efforts should be made to increase the acreage offered for uneven-aged harvest.

### Forest Plan Objective:

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

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

**Item to Measure:** Number of acres offered with uneven-aged harvest. Growth and development of seedlings, costs and returns of implementation of harvesting, costs and effects of burning within harvest units, plant species frequency and distribution, PETS species effects/population trends.

**Results:** There were no acres of irregular shelterwood offered for harvest for FY 2008. An evaluation of the effects of this harvest method is to be reported in five-year intervals. There were no studies initiated in FY 2008.

**Evaluation:** While use of irregular shelterwood should remain as an available tool, it may no longer be applicable as a forest objective.

### Forest Plan Objective:

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

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

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

**Results:** There were 22,581 acres of sand pine committed to regeneration harvest through the end of FY 2008. 2,494 acres of sand pine were offered for regeneration harvest in FY 2008.

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

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

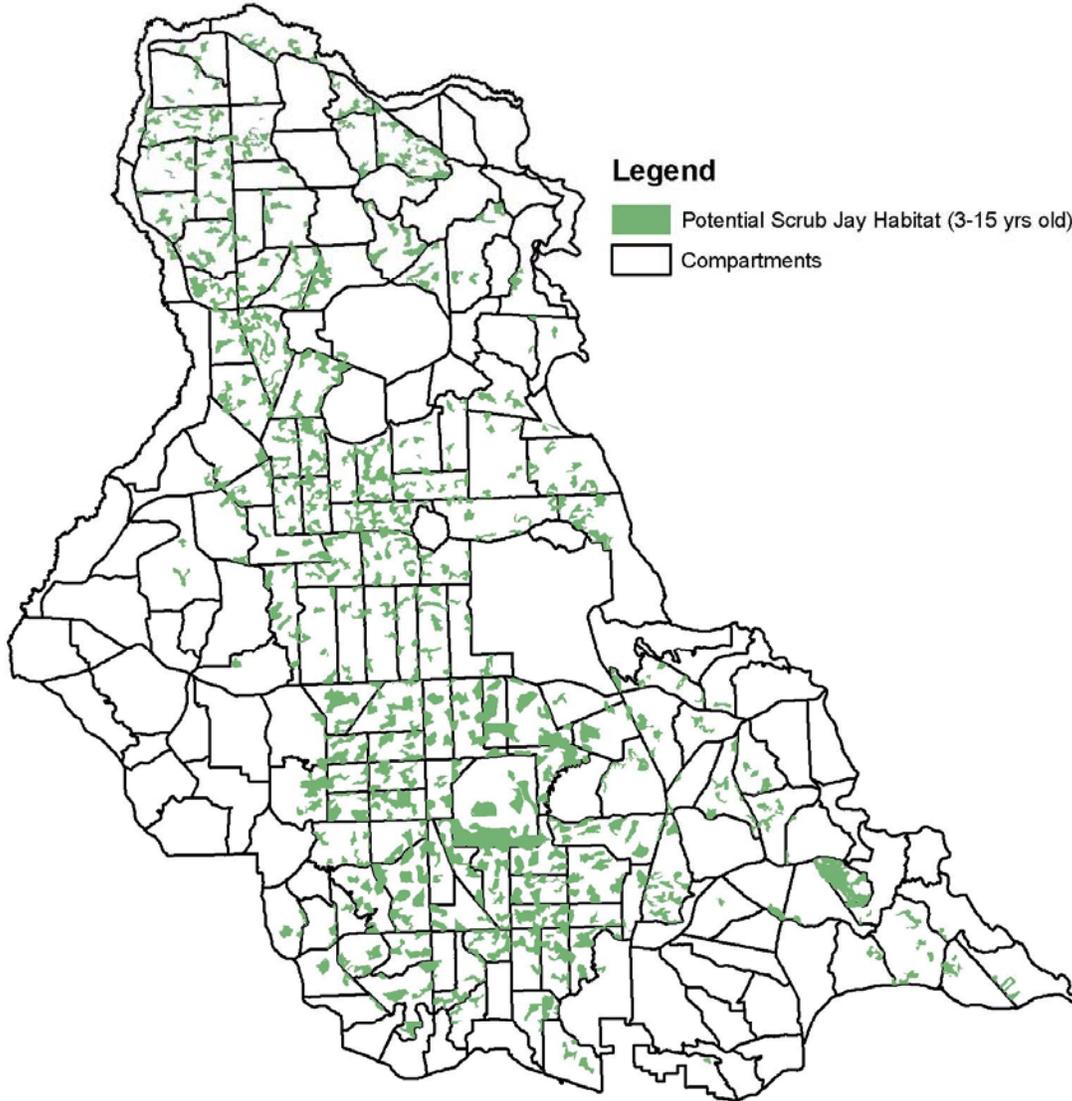
**1.17 Monitoring Question: What is the size and distribution of openings in sand pine?**

**Item to Measure:** Size of openings.

**Results:** The average size of sand pine openings created by timber harvest from 2000-2008 is 54 acres. The average size of openings created by timber harvest in 2008 was 92 acres. Since FY 2000, there have been 52 openings created greater than 100 acres. In 2008, there were 12 openings created greater than 100 acres by timber harvest.

**Evaluation:** The Forest Plan desired condition of sand pine scrub openings is to have large openings up to 160 acres in most of the forest and up to 320 acres in portions of the forest. While some large openings have been created, the average size of acres committed to regeneration in FY 2008 is smaller than desired. The purpose of increasing the size of opening is to maximize scrub-jay occupancy. The following figure shows the distribution of scrub-jay habitat on the Ocala National Forest.

## Potential Scrub Jay Habitat 2008



### Legend

- Potential Scrub Jay Habitat (3-15 yrs old)
- Compartments

Management Area	Acres of Potential SJ Habitat
Trailless Wilderness - MA 0.1	2
Wilderness with Trails - MA 0.2	999
Genetic Resource Management Area - MA 2.3	14
Special Interest Area - MA 3.1	3
Minimum Development, Motorized - MA 4.2	34
Moderate Recreational Development - MA 4.4	263
Developed Recreation Area - MA 4.5	1
Hardwood/Cypress, No Timber Production - MA 5.1	58
Longleaf/Slash, Adaptive Mgmt., RCW Mgmt. - MA 7.3	366
Longleaf/Slash, Adaptive Mgmt., No RCW Mgmt. - MA 7.3	311
Sand Pine, Natural Regeneration, Large Openings - MA 8.1	3,384
Sand Pine, Mixed Regeneration, Moderate Openings - MA 8.2	35,468
Scrub Jay Management Area - MA 8.4	742
Pinecastle Bombing Range - MA 9.1	1,830
<b>Total</b>	<b>43,295</b>

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Forest Plan Objective:

- Designate the following acres of future old growth by community type.

**Table 44. Old-Growth Community Objectives**

Old-Growth Community	Acres
Upland Longleaf Pine Forest	10,200
Southern Wet Pine Forest, Woodland, and Savannah	11,000
Cypress/Tupelo Swamp Forest	17,700
River Floodplain Hardwood Forest	2,900
Hardwood Wetland Forest	24,200
Dry and Dry Mesic Oak/Pine Forest	2,200
Coastal Plain Upland Mesic Hardwood Forest	1,700
Dry and Xeric Oak Forest, Woodland, and Savannah	2,100
<b>Total</b>	<b>72,000</b>

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

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

**Results:** Old growth has only been designated on the Apalachicola NF and the table below shows the acres of each community designated.

**Table 45. Old-Growth Designations on the Apalachicola NF**

Old-Growth Community	Acres
Upland Longleaf Pine Forest	6,836
Southern Wet Pine Forest, Woodland, and Savannah	9,944
Cypress/Tupelo Swamp Forest	6,120
River Floodplain Hardwood Forest	1,548
Hardwood Wetland Forest	8,423
Dry and Dry Mesic Oak/Pine Forest	1,686
Coastal Plain Upland Mesic Hardwood Forest	315
Dry and Xeric Oak Forest, Woodland, and Savannah	410
<b>Total</b>	<b>35,282</b>
Upland Longleaf Pine Forest	6,836

**Evaluation:** Old growth should be designated on the Ocala and Osceola NF. A review of acres available suitable for old growth designation on the Osceola and Ocala NF in management areas where there is no scheduled timber harvest to provide for sustained yield timber production are listed below by community type. This shows the potential for old growth in these management areas as an example.

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**Table 46. Acres available for old growth designation in management areas classed as unsuitable for timber production on the Osceola and Ocala NF**

<b>Old-Growth Community</b>	<b>Acres</b>		
Upland Longleaf Pine Forest	932	1,175	2,107
Southern Wet Pine Forest, Woodland, and Savannah	1,490	9,171	10,661
Cypress/Tupelo Swamp Forest	9,469	848	10,317
River Floodplain Hardwood Forest	269	841	1,110
Hardwood Wetland Forest	2,056	11,163	13,219
Dry and Dry Mesic Oak/Pine Forest	0	32	32
Coastal Plain Upland Mesic Hardwood Forest	0	354	354
Dry and Xeric Oak Forest, Woodland, and Savannah	0	1,308	1,308
<b>Total</b>	<b>14,216</b>	<b>24,892</b>	<b>39,108</b>

**Forest Plan Goals:**

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

**Forest Plan Objectives:**

- Evaluate Choctawhatchee lands that no longer exhibit national forest character and consider for exchange for lands adjacent to or within the Apalachicola, Ocala, and Osceola National Forests. Exchange national forest land along the Ocklawaha River for State-owned land within national forest boundaries. Exchange Forest Service-owned minerals under Withlatchoochee and Blackwater State Forests for land within Pinhook purchase unit.
- Acquire land within the 170,600-acre Pinhook purchase unit. Within the Apalachicola, Ocala, and Osceola National Forests, annually acquire a minimum of 200 acres of forest inholdings. Acquire 6,500 acres adjacent to the Ocala NF.

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

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

**Results:** There were 38.17 miles of boundary lines marked/maintained of National Forest System lands in Florida in FY 2008. Due to limited funding and staffing, it was not feasible to mark and post all newly acquired properties.

In FY 2008, the National Forests in Florida acquired a total of 702.38 acres through completion of three land adjustment cases.

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**Evaluation:** The Forest lacks the funding and experienced staff to sufficiently mark/maintain our existing boundary lines and boundary lines associated with new acquisitions.

These newly acquired lands, particularly those pertaining to the Florida National Scenic Trail, present a challenge to the Forest in regards to landline location and maintenance. In addition, constraints on acquisition funding continue to impede our ability to fully meet our potential and expectations within the program.

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

**Item to Measure:** Change in water chemistry regarding acid neutralization. Fecal-coliform in swim sites, drinking water, recreation areas, and administrative sites; chemistry of water in State well sites.

**Results:** Districts have monitored water quality at all developed swim sites on all three forests. In FY2008 for the Apalachicola NF, facilities that exceeded state standards included Camel Lake on March 5, 2008, Mack Landing on September 4, 2008, and Porter Lake on September 4, 2008. The Wakulla Work Center tested positive for bacteria on August 5, 2008, but this was a result of the construction work on the plumbing system.

The state standard for nitrates in potable water is 10mg/liter of nitrates for drinking water from groundwater sources and .30mg/liter from drinking water from springs. Nitrate levels for groundwater across the three forests are determined from water sampling at potable well sites and state ambient groundwater monitoring sites. Potable water at recreation and administrative sites originates from groundwater (not springs) and all potable water tested on the National Forests continues to be below state standards.

There were several dates during the year when drinking water sites failed to meet standards. On the Ocala NF, River Forest Group Camp's drinking water failed to meet state standards on June 10 and July 1, 2008. The drinking water at Lake Door failed to meet standards on July 1, July 7, July 14, July 22, July 23, October 28, November 4, and December 1, 2008. Florida DEP issued a Violation Notice for Lake Dorr for the November 4, 2008 failure. Two concessionaire-managed sites failed to meet state standards for drinking water in 2008: Sweetwater Cabin on January 16, 2008 and Clearwater Campground on June 11, 2008.

In addition, hand-pump drinking water sites (not reportable to Florida DEP) at Buck Lake Group Camp failed to meet standards on March 6, November 11, and November 10. Similarly, the hand pump drinking water site at Hopkins Prairie failed to meet standards on April 10, October 27, November 4, and December 25, 2008 as well as the hand pump site at East Delancy on November 10, 2008.

No sites on the Osceola NF exceeded standards for swim sites or drinking water in 2008.

### **1.21 Monitoring Question: Is air quality being maintained?**

**Item to Measure:** Particulates, Ozone

**Results:** Air quality information has been updated for all monitoring sites on or near the Forest. Ozone and fine particulate (PM<sub>2.5</sub>) levels continue to remain below the national ambient air quality standards (NAAQS).

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Ambient Air monitoring Information: The two criteria pollutants of most interest to Forest managers are ozone and fine particulate matter. The Florida Department of Environmental Protection (FDEP) operates a network of air quality monitors state-wide, both for fine particulate matter (PM<sub>2.5</sub>) and ozone. Air quality monitoring for particulate matter includes both fine and coarse particulates, although from a human health stand-point, fine particulates are of the most concern.

The state-wide monitoring network is not distributed uniformly across the State; most monitors are concentrated near urban areas. The Forest operates one ozone monitor (Site 12-003-0002) at the Osceola Work Center; this monitor is part of the statewide network for ozone compliance monitoring. The two particulate monitors located at the Wakulla (Site 12-073-0005) and Ocala (Site 12-069-0003) Work Centers are operated in cooperation with the FDEP, Division of Air Resource Management; however, data from these monitors is not included in the state's determination of NAAQS compliance. Acid deposition is monitored by EPA at a site on the Apalachicola National Forest. The US Fish and Wildlife Service operates an ozone monitor and an aerosol monitor (as part of the national visibility monitoring network, IMPROVE) at nearby St. Marks National Wildlife Refuge. Data collected by IMPROVE provides information on the constituents of particulates in the atmosphere, as well as a measure of visibility.

National Ambient Air Quality Standards (NAAQS): There are NAAQS for six air pollutants, but in the eastern US, ozone and fine particulate cause the most concern. Each state maintains a monitoring network designed to track attainment of the ozone and fine particulate standards. As of the end of the 2008 monitoring year, there were no nonattainment areas in Florida. However, it is important to note that the NAAQS for 8-hour average ozone level was decreased from 0.08 parts per billion to 0.075 parts per billion in March of 2008. The state will work with EPA to determine whether any areas of the state fail to meet the new standard based on 3-years of data. The final determination is expected in the spring of 2010; more information is available at "[http://www.dep.state.fl.us/Air/new\\_ozone\\_standard.htm](http://www.dep.state.fl.us/Air/new_ozone_standard.htm)." For the purposes of this forest plan monitoring report, the reported averages are compared to the newer NAAQS for ozone.

Fine Particulate Matter: Fine particulate matter is defined as airborne particles with diameters less than or equal to 2.5 microns, hence the acronym PM<sub>2.5</sub>. These very small particles remain suspended in the air much longer (on average) than coarse (PM<sub>10</sub>) particles and behave more like a regional pollutant such as ozone. Examination of 2003 aerosol monitoring data from St. Marks National Wildlife Refuge, located very near the Apalachicola National Forest and Bradwell Bay Wilderness, shows that ammonium sulfate and organic carbon account for about 85% of the fine particulate mass.

Data source: <http://vista.cira.colostate.edu/views/Web/AnnualSummary/Composition.aspx>

The PM<sub>2.5</sub> particulate standard has two parts; the 24-hour or daily standard and the annual standard. The 24-hour standard is 35 ug/m<sup>3</sup>; the annual standard is 15 ug/m<sup>3</sup>. In order to attain these standards monitoring data must show that:

1. the 98th percentile of the distribution of the 24-hour concentrations for a period of 1 year, averaged over 3 years, does not exceed 35 ug/m<sup>3</sup> and
2. the three-year average of the annual arithmetic mean of the 24-hour concentrations does not exceed 15 ug/m<sup>3</sup>.

Monitoring results from sites near the Forest for 2006-2008 show the annual average fine particulate concentrations are relatively unchanged; some monitors showed a slight decrease from 2007 levels, and some monitors showed slight increases. Short term (24-hour) concentrations decreased from the previous year. The higher levels from 2007 may reflect the influx of smoke and fine particulates from large wildfires (such as the one in the Okefenokee swamp in southern Georgia). The 3-year averages for 2008 remain well below the 24-hour fine particulate standard of 35 micrometers/cubic meter.

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**Ozone:** In addition to the ozone monitor operated by the FDEP and located at the Osceola Work Center in Baker County, another ozone monitor is located near Sumatra on the Apalachicola National Forest. The Sumatra monitor is part of EPA's Clean Air Status and Trends Network (CASTNET). The purpose of this network is to assess the effectiveness of emission control strategies implemented nationwide. Ozone data from the Sumatra site is not used for determining attainment, but the results from the most recent year of available data (2005) are similar to other ozone monitors in the area. All monitors located on, or near, the Forest show compliance with the 2008 ozone NAAQS.

**Acid Deposition:** CASTNET operates two sites in Florida that measure dry deposition of sulfur and nitrogen. One site is located on the Apalachicola National Forest near Sumatra. Wet deposition is also measured at the same site by the National Atmospheric Deposition Program (NADP). Co-location of CASTNET and NADP sites allows these programs to estimate ratios of wet/dry deposition and wet/total deposition (<http://www.epa.gov/castnet/>). There are no additional data summaries for these sites since the 2005 Monitoring and Evaluation Report, so the following information has not changed. Dry deposition accounts for about 18 percent of total sulfur and 23 percent of total nitrogen deposition near the Forest. A review of the available NADP data (1991 to 2004 from the Sumatra site) indicates that total sulfur deposition fluctuated from a high of 7.8 kilograms/hectare/year (kg/ha/yr) to the level of 4.3 kg/ha/yr. Nitrogen deposition decreased from a high of 5.6 kg/ha/yr to 3.8 kg/ha/yr. It is believed that acid deposition rates are decreasing due to the final implementation of pollution controls by electric generation utilities, as required by the 1990 Clean Air Act Amendments Title IV (Acid Rain) program.

**Mercury Deposition:** The mercury deposition monitoring site closest to the Forests is located on the Chassahowitzka National Wildlife Refuge. Data from the site showed an increase in mercury deposition in 2005 (21.7ug/m<sup>2</sup>) over the previous year (17.7 ug/ m<sup>2</sup> in 2004) which fits the overall increasing trend since monitoring began in 1998. Florida continues to record some of the highest mercury deposition in the country, and has a statewide freshwater fish consumption advisory in effect.

**Evaluation:** Air quality in the vicinity of the Forests remains within National and State standards; mercury deposition appears to continue increasing.

**1.22 Monitoring Question: Which water bodies were fertilized?**

**Item to Measure:** Report which water bodies were fertilized.

**Results:** Selected excavated ponds on the Apalachicola and Osceola National Forest have been fertilized to enhanced fish production. When normal water levels are attained the listed ponds are fertilized during the largemouth bass growing season (Table 47). The fish populations are monitored annually with electro-fishing gear.

**Table 47. Pond Locations Fertilized in 2008.**

Apalachicola National Forest	Osceola National Forest
<ul style="list-style-type: none"> <li>o Buttermilk</li> <li>o Sumatra west</li> <li>o Sumatra east</li> <li>o 120 north</li> <li>o 120 south</li> <li>o Bloxham</li> <li>o Derby Pond</li> <li>o 267 Pond</li> <li>o 348 Pond</li> <li>o Sopchoppy</li> </ul>	<ul style="list-style-type: none"> <li>o Still Road Pond</li> <li>o Boy Scout Pond</li> <li>o Work Center Pond</li> <li>o Big Curve Pond</li> <li>o Blackman Pond</li> <li>o Battleground Pond</li> <li>o White Egret Pond</li> <li>o Catfish Pond</li> <li>o Dip Site Pond</li> </ul>

**Forest Plan Standard VG-18-** Minimize soil disturbing site preparation in longleaf and slash pine sites. When disturbance is necessary to achieve the desired future conditions, use methods that displace no more than 10 percent of the soil surface in the treated areas. The objective should be to maintain the integrity of the native herbaceous vegetation (especially wiregrass) over time.

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

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

**Results:** 1,260 acres of longleaf had site preparation for planting by roller chopping on the Osceola National Forest, with approximately 8% soil displacement. On the Ocala NF, 2,981 acres were mechanically site prepped, with less than 5% soil displacement. It is estimated that where the chopping blades penetrated the soil, the penetration was less than 2". There were no acres mechanically site prepped on the Apalachicola NF. The total area mechanically site prepped was 4,241 acres, with soil displacement averaging 6%.

**Evaluation:** Single pass roller drum chopping in palmetto-gallberry understory types for site preparation appears to result in minimum soil disturbance.

**1.24 Monitoring Question: What are the effects of cattle grazing on vegetation?  
QUESTION REMOVED BY AMENDMENT #2**

## ***Sustainable Multiple Forest and Range Benefits***

### **Forest Plan Goal:**

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

### **Forest Plan Objective:**

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

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

#### **Item to Measure: Percent of accessible site by type of recreation site.**

**Results:** Table 48 shows the percent of areas meeting ADA standards. There are 35 developed sites level 3 and above, and one level 2 boat ramp/fishing pier, where this objective applies. This table shows the sites that meet some level of accessibility standards.

**Table 48. Recreation Sites Meeting ADA Standards.**

<b>Location</b>	<b>Recreation Site</b>
Apalachicola National Forest	Leon Sinks Trail Head – 100% (hiking trail – 20%)
	Silver Lake Day Use (picnic and swim) – 100%
	Wright Lake Campground – 50%
	Hickory Landing Campground – 25%
	Whitehead Landing Campground – 25%
	Fort Gadsden Historic Site – 25%
	Mack Landing Campground – 25%
	Camel Lake Campground – 0%
Ocala National Forest	Juniper Springs Recreation Area – 45%
	Salt Springs Recreation Area – 75%
	Silver Glen Springs Day Use – 25%
	Fore Lake Recreation Area – 25%
	Mill Dam Day Use (picnic and swim) – 25%
	Alexander Springs Recreation Area – 35%
	Doe Lake Group Camp – 50%
	Lake Dorr Cabin – 100%
	Wildcat Lake Day Use – 25%
	Lake Delancy East Campground – 25%
	Lake Delancy West Campground – 35%
	Buck Lake Campground – 25%
	Hopkins Prairie Campground – 25%
	Juniper Wayside Day-use – 50%
Lake Dorr South Boat ramp and Fishing Pier –	

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Location	Recreation Site
	75%
	Clearwater Lake Campground –0%
	Big Scrub Campground – 30%
	Big Bass Campground –0%
	River Forest Group Campground –0%
	Lake Shore Group Camp –0%
	Sweetwater Cabin –0%
	Lake Eaton Campground –25%
	Lake Dorr Campground –0%
Osceola National Forest	Olustee Beach Day Use (picnic and swim) – 75%
	Ocean Pond Campground – 100%
	Olustee Depot VIC – 100%
	The Landing Group Camp – 75%
	Olustee Battlefield – Niswander Hiking Trail – 100%

**Evaluation:** Seven of the 35 developed campgrounds do not meet this objective. Efforts are underway to achieve 30% accessibility at all level three sites. With seven years of the Forest Plan completed, it is anticipated that the forest will be able to achieve this objective within the next four years. River Forest Group Area will soon have accessible restroom/shower building and group ramada.

**Forest Plan Goal:**

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

**Forest Plan Objective:**

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

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

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

**Results:** MM also describes standards to provide a desired quality experience and customer service. Areas that were being reconstructed in FY 2008, and will meet all applicable MM quality standards when completed. Such as Salt Springs, Juniper Springs, River Forest on the Ocala National Forest and several OHV trailheads on the Apalachicola and Ocala National Forests. Recreation areas managed by the Ocala Recreation Complex special use permit (concessionaire) are expected to meet all applicable MM standards for quality of experience and customer service.

During FY 2008, Fee Demo revenues have been used to repair, replace and augment facilities, especially to construct new accessible host sites, accessible parking spaces and replace many old and unused bulletin boards. The four new host sites at Alexander Springs Recreation Area

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are almost completed. Fee Demo was used at numerous recreation areas day use areas to enhance the quality of experience and customer service provided. The Apalachicola Forest is expected to be completed in 2009.

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

### Forest Plan Goal:

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

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

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

**Table 49. Miles of Non-motorized Trail by Type**

Forest	Type of Trail	Mileage
Apalachicola	Hiking	134.5
	Bicycle	19
Ocala	Hiking	80.3
	Horse Trail	134
	Off-Road Bicycle	22.0
Osceola	Hiking	26.4
	Horse Trail	53.0

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

**Motorized:** All forests completed the designation of OHV routes and implemented them on the ground in 2008. MVUM maps were published on October 1, 2008. See Monitoring Question 2.9 for a detailed description of the 2008 motorized route monitoring.

**Table 50. Motorized Trails designated on each of the National Forests in Florida**

Forest	Type of Motorized Trail	Mileage
Ocala NF	Motorcycle	13
	ATV & Motorcycle	138
	Mixed-use Roads	107
Osceola NF	Mixed-use Roads	377
Apalachicola NF	Motorcycle	55
	ATV & Motorcycle	34
	Mixed-use Roads	52

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

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

**Results:** Approximately 1042 miles (67 percent) of the planned 1562-mile long trail have been certified and opened for public use as FNST. An additional 121 miles of the existing footpath are planned for official certification as FNST, and 132 miles of trail are proposed for construction on existing public land. The remaining 267 miles of the continuous footpath requires acquisition to secure a route for public use. In addition to the continuous FNST, 114 miles of certified side, connector and alternate trail routes are also open to the public.

The Florida Trail Association and the National Forests in Florida manage the FNST through a partnership agreement that totaled approximately \$2,000,000 in FY08. The Florida Trail Association provided over \$1,300,000 in in-kind (over 68,000 volunteer hours) and cash matching the \$649,094 the National Forests in Florida allocated to the FTA for trail construction and management of trail. Through this agreement, the Florida Trail Association works with the National Forests in Florida and the dozens of land managers and owners along the trail in certifying trail segments for public use. Three certification agreements were executed adding 67 new miles of FNST and 40 existing miles were recertified as FNST providing important linkages for the FNST. In addition, 108 miles of trail were inventoried and assessed, and the FNST geographic information system was updated and utilized in support of FNST program including updating the Forest Service INFRA database with FNST data. The FTA and Forest Service responded to over two dozen proposed government actions affecting the trail.

Florida Trail volunteer trail crews maintained the existing trail, constructed or reconstructed 14 miles of the FNST, planned and laid out three miles of new trail, and built nine bridges, and 580 feet of boardwalk. An additional 60 volunteers and staff were certified to USDA Forest Service standards for safe chainsaw or crosscut operation, 32 volunteers were trained in the use of rigging, and 10 volunteers in hand tools maintenance.

Florida Trail outreach initiatives included the Florida Hiking Festival and the debut of a newly designed interactive website ([www.floridatrail.org](http://www.floridatrail.org)). Our public outreach efforts focused on raising awareness of the Florida Trail and its significance as a resource for outdoor recreation in communities across the state. The Florida Hiking Festival attracted over 600 participants who enjoyed educational seminars, interpretive hikes, and engaging speakers. This annual event served as the 2008 kickoff of a year's celebration of the 25<sup>th</sup> anniversary of the Florida Trail's designation as a National Scenic Trail and the 40<sup>th</sup> anniversary of the National Trails System Act of 1968. The Florida Trail website received over 5 million visits in the past year. Volunteer trail

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leaders annually post hundreds of events, trail activities and other trail news on the website keeping the public up to date about the trail and how they can get involved. While the website continues to be the Florida Trail's most prominent public outreach tool, over 78,000 trail brochures and publications were distributed to the public. A 28-minute Florida Trail documentary for television broadcasting was distributed to media markets throughout Florida. Clewiston, Moore Haven, Okeechobee, Inverness and Pensacola Beach were designated as Florida Trail Gateway Communities to promote them as destinations for outdoor enthusiasts while increasing the strength of partnerships between local FTA volunteers and the community.

The National Forests in Florida has acquired and is managing 3517 acres in 37 tracts on behalf of the FNST. The National Forests in Florida continued its successful partnership with Florida Natural Areas Inventory (State agency) to share costs in inventorying natural resources on its FNST lands. Twenty-one parcels along the Suwannee River received natural resource inventory work in 2008, revealing a number of rare species within the Florida Trail corridor. The agency continued its partnership with the Gulf Coastal Plain Ecosystem Partnership (GCPEP) to provide land management and stewardship, including prescribed fire and ecosystem restoration work, on its FNST lands. The Forest Service renewed its challenge cost share agreement with University of Florida to conduct visitor counts and marketing analysis along Florida Trail which reported nearly 350,000 visitors to the trail during the past year.

Utilizing \$16,201,650 in appropriations over the past nine years, the FNST land acquisition program has protected 19.9 miles of trail and 3517 acres. These past appropriations for FNST land acquisition have been exhausted so in the absence of Federal funding, the FNST acquisition program has been working with state, water management district, and local land acquisition programs to protect the Trail. This approach has been successful – since 2007 the State and water management districts have acquired lands in Columbia, Orange and Seminole Counties that should allow 15.5 miles of trail. However, this partnership approach is now constrained by decreases in state revenue and sharp cutbacks in state funding for land acquisition.

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

### **Forest Plan Goal:**

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

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

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

**Results:** Management of the river corridors continues to be based on their ongoing status as proposed wild and scenic rivers. There have been no statewide or regional initiatives to move forward with a recommendation for the studied rivers.

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

**Forest Plan Goal:**

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

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

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

**Results:** Clear Lake has not yet been recommended for wilderness designation and no Legislative EIS has gone forward. The area continues to be managed as a Wilderness Study Area to protect wilderness values.

**Evaluation:** Similar to the Wild and Scenic River recommendations, Legislative EISs for wilderness designation will not proceed unless there is support for it from the state's congressional delegation and a commitment to introduce a bill into Congress..

**2.7 Monitoring Question: Has wilderness character been protected?**

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

**Results:** Continuing threats to wilderness character include motorized incursions into wilderness by OHVs and ATVs, military overflights on the Ocala and Apalachicola National Forests, the boat dock structure at Juniper Prairie Wilderness, the inholding in Juniper Prairie Wilderness, and the old CCC bridge in the Mud Swamp/New River Wilderness.

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

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

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

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

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

**Forest Plan Objective (Amendment #5):**

- Designate a system of roads, trails and areas for motor vehicle access. This process will incorporate existing travelways as much as possible and include public participation and collaboration with local user groups.

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

**Item to Measure: Photo points at areas of resource concern.**

**Results:** Baseline photo points have been established along OHV routes on the Apalachicola, as well as on the Ocala's Centennial Trail and Scrub Jay Trail. The forest has completed a separate OHV Monitoring Report for the Ocala NF. The Osceola NF still needs to establish some photo points on Phase 2 OHV Trails in FY2009.

**Evaluation:** Photo Monitoring has occurred now for 3 years on the Osceola's Phase 1 trails, and for 2 years on the Ocala's Phase 1 trails. Baseline photo points for the Phase 2 trails on the Apalachicola and Ocala have been established.

**Ocala NF**

*Implementation:* All trails were marked on the ground, with trails averaging 5 or more signs or carsonite posts per mile (i.e., a marker every quarter-mile or less). The number of signs vandalized or missing was tracked, and this ranged from 3% on the Delancy Loops trail to a high of 20% for the Longleaf Trail (the longest OHV route on the forest). The number of volunteer hours it took to post and maintain the trails was tracked, and ranged from 900 volunteer hours per month to 1,900 hours per month over the first nine months of 2007.

*Compliance:* Only 3 areas with unauthorized trails were noted (one each on Hog Valley, Tobacco Patch, and Delancy Loops), and in each case these unauthorized trails came onto Forest Service land from private property. OHV corrals have been added to trailheads to accommodate parking demand. Trailhead parking reached capacity only on two occasions in 2007, the Thanksgiving weekend and pre-Christmas weekends. Some questions were dropped from the OHV Monitoring Report for 2008 because the information was unobtainable or because it did not yield useful information, such as for warnings or violation notices issued; there is no meaningful way to track vehicle type (licensed car, truck, motorcycle, or ATV) or determine trend information.

Photo points have been very useful in documenting which non-designated, unauthorized roads are still being used; and which are becoming revegetated from non-use (Figures 5a-5b). The percentage of non-designated roads being used on the Ocala ranged from 36% on the Tobacco Patch Trail to 80 percent on the Wandering Wiregrass Trail. OHV routes are still very new, and this level of unauthorized use is not unexpected during the early implementation phase. The monitoring process identified several areas of high use and a variety of corrective measures have been initiated in 2008 including blocking trails, improving signage, and installing fences. A total of 45 unauthorized roads/trails were blocked with downed trees where they intersected designated OHV routes which has helped discourage use and speed recovery (Figure 6a). However, it was reported that forest users opened up some of the blocked roads with chain saws during hunting season.

*Recovery:* After three years of requiring visitors to use designated OHV trails (2006, 2007, 2008), photo points indicate that the average percent of ground cover on the non-designated routes range from 20% on the Tobacco Patch trail to 52% on the Wandering Wiregrass Trail. While the amount of "live" ground cover on these non-designated roads is approximately 5% or less, compliance is allowing needlecast, leaf litter, and dead limbs to accumulate enough to cover more than half of these non-designated routes. Many non-designated roads are still apparent on the landscape, and will remain so for a number of years, but show little or no use. Most of the non-designated roads in the photo points fall into this category.

*Trail Conditions:* Designated trails are visited at least weekly, and often daily by OHV volunteers, to identify problem areas and identify maintenance needs. The nine designated OHV trails received over 964 days of maintenance work in FY2008. A total of 26 "problem areas" were

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noted, with 18 of them being on the Longleaf Trail. A variety of methods have been used including fences, posts, and other barriers to re-direct use in these areas (Figures 7a and 7b).



**Figure 5a. Hog Valley Photo Point 17 in 2007. An unauthorized road no longer being used; no tracks and light ground cover.**



**Figure 5b. Hog Valley Photo Point 17 in 2008. With no use, the road is becoming overgrown.**



**Figure 6a. Longleaf Trail Photo Point 20 in 2007. A well-blocked road.**



**Figure 6b. Photo Point 20 in 2008. Now part of a cutting unit, but no evidence of access by OHVs.**



**Figure 7a. Longleaf Trail Photo Point 43 in 2007. Widened by OHV use. District staff began blocking these off with fences and barriers in 2007.**



**Figure 7b. Longleaf Trail Photo Point 43 in 2008. Barrier fences installed in 2008.**

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**Osceola NF**

The Osceola NF designated a system of Mixed use roads as OHV routes, and photo points were taken in 2006, 2007, and 2008. The photo points indicate that non-designated routes are recovering and becoming overgrown with vegetation. Figures 8a – 11b show photo points along OHV routes on the Osceola NF.



**Figure 8a. Ocean Pond Photo Point 7 in 2006. A nondesignated road with no use and live ground cover.**



**Figure 8b: Ocean Pond Photo Point 7 in 2008. Becoming revegetated.**



**Figure 9a. Ocean Pond Photo Point 18 in 2006. A closed road leading to an RCW colony.**



**Figure 9b. Ocean Pond Photo Point 18 in 2008. No evidence of use by the public.**



**Figure 10a. Ocean Pond Photo Point 21 in 2006. A control line for prescribed fire around a plantation.**



**Figure 10b. Ocean Pond Photo Point 21 in 2008. A control line for prescribed fire around plantation, but no evidence of use by the public.**

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**Figure 11a. Ocean Pond Photo Point 25 in 2006. Intermittent pond with heavy OHV use.**



**Figure 11b. Ocean Pond Photo Point 25 in 2008. OHV use still occurring around intermittent pond.**

**Apalachicola NF**

Phase 2 OHV trails were implemented in FY2008 and photo points established. Many trails were found to be severely flooded during the wet season, and may need some re-routing around wet areas. Figures 12 – 15 provide an indication of what the trails look like during the wet season.



**Figure 12. Trail #10-C, an ATV trail (Photo Point 1 in 2008).**



**Figure 13. ATV Trail, Trail #1 (Photo Point 7 in 2008).**



**Figure 14. Photo Point 1 in 2008 showing a berm on the Motorcycle Trail.**



**Figure 15. Photo Point 6 in 2008 on the Motorcycle Trail.**

**Forest Plan Goal:**

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

**Forest Plan Objective:**

- Evaluate for significance five archeological sites each year.

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

**Item to Measure: Number of sites evaluated. Annual report on protection efforts.**

**Results:** *Apalachicola NF:* Two archeological sites were evaluated in FY2008. One was within Trout Pond developed recreation area which was proposed for improvements and the other was within a private driveway easement. Two Special Use Permits under the authority of the Archaeological Resources Protection Act (ARPA Permits) were administered. One was for archeological data recovery along a proposed waterline beside Lawhon Mill Road and the other was for a site evaluation in an area proposed for development of a private driveway. Two other permits were initiated and will be continued into the next FY. Site protection efforts included monitoring construction along the historic GF&A rail-to-trail project, monitoring road access barrier installation in sensitive areas and improving communications with Wakulla Springs State Park about coordinating with USFS archeologists prior to implementing plowed fire lines on USFS land. An investigation was initiated regarding theft of a 1940s-era car located within the Bradwell Game Farm Historic District. The Federal Highways Administration (FHWA) compiled documentation on two historically significant CCC-era bridges scheduled for removal.

*Ocala NF:* Site protection efforts included documentation of the historic Carr Cabin under contract with Johnson Peterson & Associates, stabilization and maintenance of the CCC-era Juniper Millhouse and monitoring of Ocklawaha banks for erosion in response to rising water levels. An investigation was initiated in response to notification by the State Archaeologist that a University of Florida student conducted an unauthorized survey on USFS lands in 2007.

*Osceola NF:* Three sites were evaluated for significance as part of a survey for a proposed timber harvest, one determined eligible and two ineligible for NRHP listing. An additional site evaluation was initiated with assistance from the NPS through an interagency agreement, but the project was not completed in FY 2008. Resource protection efforts included administering a contract with Hartrampf to produce a stabilization and maintenance plan for the CCC-era "Olustee Garage". SHPO consultation on the draft was initiated in FY 2008, but not completed.

**Evaluation:** The objective to evaluate five archeological sites in FY 2008 was met. Site protection measures were within the Forest Plan objective. A new target to enter all heritage site and event data into the INFRA database was also met, a requirement that did not exist when the Florida Land Management Plan was written. By the end of FY 2008, 2971 sites and 1633 events were entered into INFRA. The majority of work focused upon compliance projects associated with fire hazardous fuel reduction and fire suppression, timber sales, special uses, and recreation developments. Heritage staff served as off-forest detailers in Texas and California in response to wildfires.

**Forest Plan Goal:**

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

**Forest Plan Objective:**

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

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

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

**Results:** This objective was to be accomplished by June 2002. Currently, the 2380 section of the Forest Service Manual continues to be revised to provide direction for implementation of the SMS. The National SMS Training Modules are also being developed (projected to be available in FY 2007 or FY 2008) to provide orientation level, working level, and technical level knowledge. Until forest personnel have received training in SMS, the visual management system (VMS) is still in place. The inability of the Forest to implement the SMS by the target date of June 2002, is directly attributable to the lateness of the availability of regional and national direction on the methodology and technology to be employed under SMS.

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

**Forest Plan Goal:**

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

**2.12 Monitoring Question: Do forest visitors understand Forest Service practices and do they value and respect the resource being interpreted? QUESTION REMOVED BY AMENDMENT #2**

**Forest Plan Goal:**

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

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

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

**Results:** The following tables show the gross receipts by source for the National Forests in Florida, and the payments to counties containing national forest system land in FY2008.

**Table 51. Gross Receipts by Source.**

Source	Apalachicola	Ocala	Osceola	Choctawhatchee	Total
Recreation User Fees					
Timber Products Cut	305,876	62,780	702,664		1,071,320
Grazing Fees					
Land Use Fees	39,552	115,186	8,613		163,351
Mineral Fees			4,353		4,353
Power	45,078		1,956		47,034
Special use Fees		170,585	34,919		205,504
Fee Demo	*	*	*		*443,190
<b>Total</b>	<b>390,506</b>	<b>348,551</b>	<b>752,505</b>		<b>1,934,752</b>

**Table 52. Secure Rural Schools and Community Self-Determination Act Receipts**

Apalachicola		Ocala		Osceola		Choctawhatchee	
Franklin	\$ 26,983.90	Lake	\$ 285,058.93	Baker	\$272,861.20	Okaloosa	\$ 0
Leon	\$127,795.76	Marion	\$ 933,427.12	Columbia	\$240,893.69	Walton	\$ 0
Liberty	\$325,533.78	Putnam	\$ 80,088.22			Santa Rosa	\$ 0
Wakulla	\$206,264.95						
<b>Total</b>	<b>\$686,578.39</b>		<b>\$1,298,574.27</b>		<b>\$513,754.89</b>		<b>\$ 0</b>

**Table 53. Payment in Lieu of Taxes**

Apalachicola		Ocala		Osceola		Choctawhatchee	
Franklin	\$ 35,241.00	Lake	\$ 52,418.00	Baker	\$ 75,933.00	Okaloosa	\$8,802.00
Leon	\$ 149,605.00	Marion	\$170,654.00	Columbia	\$ 85,822.00	Santa Rosa	\$3,350.00
Liberty	\$ 376,662.00	Putnam	\$19,686.00			Walton	\$ 922.00
Wakulla	\$ 246,982.00						
<b>Total</b>	<b>\$503,599.00</b>		<b>\$145,729.00</b>		<b>\$ 95,433.00</b>		<b>\$8,289.00</b>

**Evaluation:** Federal legislation (Secure Rural Schools and Community Self-Determination Act of 2000, P.L. 106-393) changed the way Forest Service payments to states are calculated. Since 1908 under legislation commonly known as the 25 Percent Fund Act, 25% of any revenues from National Forest lands within state boundaries were returned to that state to be used for roads and schools. The state then distributed those funds to their counties with National Forest lands in their boundaries. The new legislation gives counties containing National Forest lands the option of taking the average high-three 25% payments they received between the years 1986 and 1999 in place of the 25% payment they would receive from Forest revenues from the most recent year.

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In FY 2006, all counties elected the "full payment" (the law's term used to mean the "average of the high-three"). Total payments to counties increased to \$3,459,966 in FY 2002, and remained at that level until this year. The Secure Rural Schools bill reached its termination date in 2006. A final payment was authorized under continuation legislation in 2007.

On October 3, 2008, the Secure Rural Schools and Community Self-Determination Act of 2000 was reauthorized as part of Public Law 110-343. The new Secure Rural Schools Act has some significant changes. To implement the new law, the Forest Service requested states and counties to elect either to receive a share of the 25-percent rolling average payment or to receive a share of the Secure Rural Schools State (formula) payment by November 14, 2008 (county elections). The new Secure Rural Schools Act has some significant changes that encourage counties to collaborate with National Forests on projects to benefit public lands.

Currently Liberty, Marion, Wakulla, Columbia, and Baker counties have elected to allocate funding under Title II of the Act for projects benefiting the National Forests in Florida. The forest is working with the counties to organize a Resource Advisory Committee (RAC), as authorized by the law. Although the five counties range from the extreme portions of the state, we hope to create one RAC that will review the spending of all Title II funding statewide. The RAC will consist of 15 people who will develop, monitor, and recommend projects that benefit National Forest land in Florida.

Examples of some of the collaborative projects on other forests include environmental awareness camps, road paving in campgrounds, non-native invasive plant control, reducing hazardous fuel buildup, and purchasing equipment and supplies to support work. Project funding can also be used to leverage grant dollars and collaboration with partners, such as federal and state agencies and non-profit organizations.

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

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

**Results:** The actual quantity of products *collected* is unknown for 2008. The quantity for which collection permits were *issued* is shown in Table 54. Permits are usually issued on a broad area basis and specific locations are generally not recorded. 485 permits were issued. 173 permits were free-use with a value of \$2,147.52. 312 permits were commercial permits with a total value of \$19,623.96.

**Table 54. Special Product Summary**

	Apalachicola	Osceola	Ocala	Total
Fire-wood (CCF)	177.5	4	349.3	530.8
Palmetto Berries (lbs)	0	0	0	0
Palmetto Fronds (lbs)	0	0	97,800	97,800
Plants (lbs)	9	9,332	0	9,341
Plants (ea)	0	0	6,814	6,814
Boughs (lbs)	0	0	7,900	7,900
Pine Straw (bushel)	6	0	0	6
Christmas Trees (each)	0	0	121	121
Crooked Wood (lbs)	0	0	46,264	46,264
Poles (each)	0	0	100	100
Deer-Moss (lbs)	0	0	3,000	3,000

**Evaluation:** In the context of acres and amounts of the above resources present on each National Forest, the quantities of these special products removed does not appear to be

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significant except for palmetto berries on the Ocala NF. The Ocala NF has initiated an environmental analysis to determine the specific impacts of harvesting palmetto berries and any needed mitigating measures. Also, minimum permit values may need to be increased to provide more efficiency of management. More detailed information on specific sites should be tracked to help determine cumulative amounts in the same area.

**Forest Plan Standard VG-29**, Sell no more than 103 million cubic feet (MMCF) of chargeable timber from suitable land (Appendix B, "Lands Suitable for Timber Production") in the 10-year planning period.

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

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

**Results:** 5.176 MMCF was offered for sale in FY 2008: 2.848 MMCF on the Ocala, 0.728 MMCF on the Osceola, and 1.599 MMCF on the Apalachicola. The seven year total of timber offered for sale through FY's 2000-2008 is 59.3 MMCF, which is 64% of the maximum allowed for the first 10-year period. The following table shows the products offered by National Forest in each year of the Forest Plan.

**Table 55. Timber Offered by Year, Product and National Forest**

Fiscal Year	SAWTIMBER				PULPWOOD & POSTS				Grand Total
	Apalach	Osceola	Ocala	Total	Apalach	Osceola	Ocala	Total	
2000	.292	.010	.011	.313	1.240	.831	3.757	5.828	6.141
2001	.021	.003	.037	.061	.193	.774	2.125	3.092	3.153
2002	.002	.013	.123	.138	.007	.316	4.918	5.241	5.379
2003	.147	.083	.025	.255	.173	.361	4.229	4.763	5.018
2004	.337	1.057	000	1.394	.867	.713	4.039	5.618	7.012
2005	.391	.324	.000	.715	.920	.396	9.754	11.070	11.785
2006	.985	.217	.766	1.968	.357	.579	2.681	3.617	5.585
2007	.391	2.625	.219	3.235	.718	4.520	1.554	6.792	10.027
2008	.382	.343	.480	1.205	1.217	.385	2.368	3.97	5.175
<b>Total</b>	2.947	4.675	1.660	9.283	5.692	8.874	35.424	49.989	59.275

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

**Forest Plan Standard LA-8-** Evaluate special-use applications to see if they are in the public interest.

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

**Item to Measure:** Number of cases of noncompliance actions taken.

**Results:** In FY 2008, the National Forests in Florida processed/administered 618 special use permits. Due to budget constraints, compliance monitoring was completed on a sample of special use permits in FY 2008. Based on this information, it is estimated that generally less than 1% of permits are in noncompliance.

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We find ourselves processing new applications rather than completing inspections of current uses to meet public demand. The Forest has found it to be problematic and not realistic to inform new special use applicants that we are not accepting new applications until all current uses have been inspected and brought up to standard.

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

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

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

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

**Results:** 186 miles of unauthorized roads were added to the system in FY 2008. 371 miles of M.L. 2 roads were converted M.L. 1 roads; closed except for administrative purposes. 201 miles: total number added to system which included the mileage of unauthorized roads and corrections made from mapping and actual ground measurements.

**Evaluation:** Road condition surveys utilizing electronic road logs (ERL) were accomplished on the assigned random sample of roads. Data bases were updated based on the approved Road Access Plans which attributed to the addition of roads to the system to be used for OHV traffic.

The forests met the deadline to produce the Motor Vehicle Use Maps (MVUM). Implementation of approved plans continued in 2008. Databases were updated to reflect the changes made during the Access Process including both the Infra and GIS databases. The Ocala NF implemented their major road number changes on the ground – it is an on-going process. Roads and trails open for use were numbered on the ground, including signing that indicated what type of vehicles were allowed, warning and regulatory signs for safety, and the numbering maintenance level 2 system roads. Signing will continue in 2009.

The forest received Legacy Roads funding on the Apalachicola and Ocala National Forests which were used for decommissioning roads no longer needed under access plans. The projects consisted of restoring areas by reshaping disturbed areas, filling in ruts, building water bars and diversion ditches to control water flow and help stop erosion. Entry roads were physically and visually blocked with felled trees and brush. Areas were planted with native species to help re-establish vegetative ground cover to help the roads “disappear” and allow the healing process to begin. Watershed benefits will include the reduction of erosion and sediments generated and delivered to area streams, sinkholes, lakes, ponds and wetlands.

## ***Organizational Effectiveness***

### **Forest Plan Goals:**

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

### **Forest Plan Objective:**

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

**3.1 Monitoring Question: Are people satisfied with service from the National Forests in Florida? QUESTION REMOVED BY AMENDMENT #2**

**3.2 Monitoring Questions: How much public participation do we have? Have partnerships been strengthened? QUESTION REMOVED BY AMENDMENT #2**

**3.3 Monitoring Question: Did we do what we said we would?**

**Item to Measure:** Decision documents and field review of implementation.

**Results:** Vegetation management activities were monitored by sale administrators.

**Evaluation:** No serious deviation in the implementation of planned projects has been identified. Continued review of projects needs to be on-going.

### III. Evaluation of Outcomes on the Land

#### ***Major Findings and Evaluation:***

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

The primary causes of these lower outputs are the result of natural events such as wildfires and hurricane response. To a lesser extent, management emphasis on the completion of the motorized route designation process and reduced budgets have affected our ability to achieve the objectives.

#### **Forest Plan Objective:**

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

5,335 acres have been restored to longleaf pine from off-site slash pine through the end of FY 2008. 312 acres of slash pine was removed from mixed stands on the Osceola in FY 2008. In order to meet the 10-year objective, efforts should be made to increase the acreage of restoration in future years. More effort should be made to schedule removal of slash pine from mixed stands on the Osceola National Forest.

#### **Forest Plan Objective:**

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

A total of 14,989 acres have been offered through the end of FY 2008. In order to meet the Forest Plan objective, areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling.

#### **Forest Plan Objective:**

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

A total of 14,989 acres have been offered through the end of FY 2008. In order to meet the Forest Plan objective, areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling.

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**Forest Plan Objective:**

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

There were no acres of irregular shelterwood offered for harvest through the end of FY 2008. This objective may no longer be applicable as a forest objective.

**Forest Plan Objective:**

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

Timber harvest is the primary management tool for maintaining scrub jay habitat on the Ocala National Forest. Clear-cutting of mature sand pine regenerates the scrub habitat necessary for the jay. A regular cycle of sand pine regeneration is being employed to maintain the jays across the scrub on the Ocala National Forest. At the end of FY 2008, there were 41,584 acres of sand pine scrub in the 3-15 year old age class. A total of 22,581 acres of sand pine have been committed to regeneration harvest through the end of FY 2008. 2,494 acres of sand pine were offered for regeneration harvest in FY 2008. In order to meet the objectives of the Forest Plan, areas that may be suitable for this work should be surveyed, examined, and assessed for inclusion in future years work scheduling.

**Forest Plan Objective:**

- Designate the following acres of future old growth by community type.

**Table 56. Old growth Community Objectives**

<b>Old-Growth Community</b>	<b>Acres</b>
Upland Longleaf Pine Forest	10,200
Southern Wet Pine Forest, Woodland, and Savannah	11,000
Cypress/Tupelo Swamp Forest	17,700
River Floodplain Hardwood Forest	2,900
Hardwood Wetland Forest	24,200
Dry and Dry Mesic Oak/Pine Forest	2,200
Coastal Plain Upland Mesic Hardwood Forest	1,700
Dry and Xeric Oak Forest, Woodland, and Savannah	2,100
<b>Total</b>	<b>72,000</b>

Old growth has been designated 35,282 acres of the Apalachicola NF. Old growth should be designated on the Ocala and Osceola NF to fulfill the 72,000 acre forest-wide old growth objective.

**Forest Plan Objective:**

- Meet requirements of the Revised RCW Recovery Plan.

The RCW Recovery Plan (Second Revision, 2003) does not modify the recovery goals for the NFF. The Recovery Plan sets the goal for each population to increase by 5% per year. The Wakulla population increased 8% from 2007 – 2008, the Osceola population increased by 10%

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from 2007 – 2008, and the Ocala population increased by 5% from 2007 – 2008. The Forest Service Regional Office has adopted the 5% for all forests in the Region. In order to more closely conform to the revised Recovery Plan, the Forest prepared a plan amendment in 2005 which adopted management direction from the Recovery Plan, superseding the RCW management standards in the 1999 Forest Plan.

### **Forest Plan Objective:**

- Designate a system of trail and opened, classified roads in areas where motorized vehicles and bicycles are restricted. This process will incorporate existing travelways as much as possible and include public participation and collaboration with local user groups.

During 2008, the Ocala National Forest implemented designating routes in the rest of the forest (the sand pine scrub). The Apalachicola National Forest also completed on-the-ground implementation of OHV routes in 2008, although it is expected that some routes will need to be tweaked during the first year of implementation. Preliminary monitoring of areas previously designated on the Ocala and Osceola National Forests indicate generally good compliance. Photo points were established for Phase 2 OHV routes on the Ocala and Apalachicola.

### **Forest Plan Goal:**

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

The Revised Forest Plan contains recommendations for wilderness (Clear Lake WSA) and for wild and scenic rivers (4 rivers). At this time, there is no indication of support for a wilderness or rivers bill in Florida from the state's congressional delegation.

### **Demands of the Public and Emerging Issues**

The Southern Region of the Forest Service is currently undertaking an assessment of current knowledge about the influence of climate change on aquatic and terrestrial resources in the south and identifying assessment tools for monitoring climate change and measuring its effects. This assessment will not only expand our understanding of the effects of climate change on biological and physical resources, it will also help determine how this information is integrated into both long and short term planning efforts.

### **Research Needs**

Monitoring efforts during 2008 did not disclose any immediate needs for research efforts to support the implementation and monitoring of the National Forests in Florida Forest Plan. However, some research projects could contribute to understanding forest ecosystem interactions as well as impacts of management and public activities on forest systems. A better understanding of these interactions would allow managers to identify any changes needed in management activities or direction in the Forest Plan. Possible research needs include:

1. Research to determine how long T&E plant species are able to persist between disturbances in sand pine scrub habitat.

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2. Research to evaluate the long-term effectiveness of management techniques for site preparation in Florida scrub jay habitat. Primary techniques which should be evaluated are prescribed burning and mechanical roller chopping.
3. Research to determine habitat variables affecting movement of Florida scrub-jay over time. Emphasis may be on spatial constraints as well as potential barriers to movements.
4. Research to determine optimum burning intensities, frequencies and seasons required to return longleaf/palmetto flatwoods ecosystems to conditions existing prior to fire suppression management.
5. Research to determine upland use by adult and juvenile flatwood salamanders.
6. Research to identify impacts of habitat fragmentation on flatwood salamanders and striped newts.
7. Research to evaluate pond management strategies to optimize habitat for flatwood salamanders and striped newts.
8. Research on harvest methods and other options for removal of small diameter wood for hazardous fuel reduction. Research would focus on overcoming barriers that hinder use of biomass and development of markets utilizing biomass for fuel or other purposes.
9. Research current issues related to forest management within the Wildland Urban Interface.
10. Research to develop monitoring techniques to accurately assess the impacts of OHV activities on wildlife and rare plants and their habitats.
11. Research to develop techniques for the effective restoration of habitats damaged by OHV activities.
12. Evaluate potential for treating titi encroachment utilizing biomass harvest technology.

### On-Going Research on the forest includes:

1. Identification of visitor needs and perspectives along the Florida National Scenic Trail (FNST). This research is in the third year of a five year study being conducted by the University of Florida. Annual reports are on file at the Forest Supervisors office.

## IV. M & E Action Plan

### 1.0 Actions Not requiring Forest Plan Amendment or Revision:

**Action:** Evaluate the definition of “off-site slash pine” for monitoring question 1.10 to more specifically clarify.

**Responsibility:** GIS Coordinator, Forest Planner, Forest Ecologist

**Status:** Preparing proposal

**Completion Date:** FY 2010

**Action:** Work with the Florida Natural Areas Inventory to update the Element Occurrence Record boundaries for T&E plant species to meet NatureServe Standards.

**Responsibility:** Forest Ecologist in the Forest Supervisor's Office.

**Status:** Ongoing need.

**Completion Date:** 2010

**Action:** Review the 2007 monitoring protocol for T&E plants to ensure that it is an efficient and useful method for tracking species presence and status, and to gauge effects of management actions on them. Assess the ability and need to track actual population trends for each species. Revise the protocol as needed.

**Responsibility:** Forest Ecologist in the Forest Supervisor's Office in coordination with District staff.

**Status:** Needs being identified as protocol is applied.

**Completion Date:** 2010

**Action:** Solicit support from the Florida congressional delegation for designation of wilderness and wild and scenic rivers recommended in the Revised Forest Plan.

**Responsibility:** Forest Public Affairs Officer

**Status:** Carried over from 2007 Monitoring Report

**Completion Date:** FY2008-2010

**Action:** Continue to update and utilize 5-year vegetation management plans on all forests. Develop methods of analysis or modeling to better prioritize activities in the 5-year vegetation management plans.

**Responsibility:** Ecosystem Staff Officer, District Rangers, GIS analyst, District TMAs and Silviculturists

**Status:** 5-year vegetation management plans have been prepared on the individual forests. Analysis and modeling techniques need to be developed to improve prioritization efforts to better utilize limited budgets and critical habitat needs.

**Completion Date:** Ongoing, updated annually.

**Action:** Designate old growth on the Ocala and Osceola NF.

**Responsibility:** District Rangers and Silviculturists

**Status:** This item remains unchanged since FY 2007. We expect to complete by 2009.

**Completion Date:** FY 2009

**Action:** Update the GIS database, and appropriate Forest Plan pages (including maps), to reflect Management Area changes due to newly acquired lands which were automatically allocated to the management areas they were surrounded by pursuant to 36 CFR 254.3(f).

**Responsibility:** GIS Coordinator, Forest Planner, Lands Staff Officer

**Status:** On-going

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**Completion Date:** FY 2009

**Action:** Obtain data needed for revising the Forest Plan to incorporate lands acquired within the Designated Pinhook Purchase Unit.

**Responsibility:** Forest Lands Staff Officer

**Status:** Current management of the area is primarily custodial due to the conditions created by the Impassible fire. At this time, the Forest plans to wait until the Forest Plan is revised due to the size of area involved, and higher management priorities of other resources in other parts of the forest. In the interim period, data will be gathered and entered into the Forest GIS system for future analysis.

**Completion Date:** 2012

**Action:** Prepare a Forest-wide Environmental Assessment for treating Non-native Invasive Plants within Wilderness areas.

**Responsibility:** Forest Planner, Ecologists, District Staff

**Status:** Preparing proposal

**Completion Date:** FY 2010

## 2.0 Actions Requiring Amendment or Revision of the Forest Plan:

**Table 57. Completed Amendments to the 1999 Forest Plan.**

Completed Amendments	Year Completed
#1 Supplement to the FEIS Vegetation Management in the Coastal Plain/Piedmont	2002
#2 Updates of Various Standards and Management Area Allocation on the Osceola NF	2004
#3 Update of RCW Recovery Plan	2005
#4 Removal of FW Standard VG-24	2006
#5 Update for Consistency with the 2005 Travel Management Rule	2006
#6 Addition of Management Area 4.6 for Management of the FNST	2006
#7 Reallocation of Scrub-jay Management Area 8.2 to 8.4	2007

**Action:** Resume Forest Plan amendment to update the Management Indicator Species list.

**Responsibility:** Forest Planner, Ecologist and Silviculturist

**Status:** Preparing proposal

**Completion Date:** FY-10

**Action:** Evaluate the definition of “upland pine” for monitoring question 1.8 to consider modifying for tracking based on a more specific ecosystem to better correlate ecological conditions.

**Responsibility:** GIS Coordinator, Forest Planner, Forest Ecologist

**Status:** Preparing proposal

**Completion Date:** FY 2010

**Action:** Clarify and re-word direction for Forest Plan Standard VG-18 to address confusion over disturbance limit.

**Responsibility:** Forest Planner, Ecologist and Silviculturist

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**Status:** Preparing Scoping Statement  
**Completion Date:** FY-09

**Action:** Clarify and re-word direction for Forest Plan Standard WA-1 to reference most recent BMP manual.

**Responsibility:** Forest Planner, Ecologist and Silviculturist

**Status:** Preparing Scoping Statement

**Completion Date:** FY-09

**Action:** Clarify and re-word direction for Forest Plan Standard WA-3 to facilitate treatment of vegetation around water so that artificial buffers are not created around wetlands.

**Responsibility:** Forest Planner, Ecologist and Silviculturist

**Status:** Preparing Scoping Statement

**Completion Date:** FY-09

**Action:** Remove objective 18 for irregular shelterwood harvests.

**Responsibility:** Forest Planner, Ecologist and Silviculturist

**Status:** Preparing Scoping Statement

**Completion Date:** FY-09

**Action:** Clarify Objective 4 to identify overall fire frequency as the highest burn priority.

**Responsibility:** Forest Planner, Ecologist and Silviculturist

**Status:** Preparing Scoping Statement

**Completion Date:** FY-09

**Action:** Update the Wildland Fire terminology of Appropriate Management Response.

**Responsibility:** Forest Planner, Fire Management Officer, Ecologist and Silviculturist

**Status:** Preparing Scoping Statement

**Completion Date:** FY-09

**Action:** Update Forest Plan standard FI-12 to clarify Appropriate Management Response.

**Responsibility:** Forest Planner, Fire Management Officer, Ecologist and Silviculturist

**Status:** Preparing Scoping Statement

**Completion Date:** FY-09

**Action:** Update Forest Plan standard FI-15 to reflect use of fire retardants from the National Fire Retardant EA.

**Responsibility:** Forest Planner, Fire Management Officer, Ecologist and Silviculturist

**Status:** Preparing Scoping Statement

**Completion Date:** FY-09

**Action:** Update Forest Plan standard FI-16 to reflect use of fire retardants from the National Fire Retardant EA.

**Responsibility:** Forest Planner, Fire Management Officer, Ecologist and Silviculturist

**Status:** Preparing Scoping Statement

**Completion Date:** FY-09

**Action:** Update Forest Plan gopher tortoise direction to reference the most current Florida Fish and Wildlife Commission Gopher Tortoise Management Plan.

**Responsibility:** Forest Planner, Wildlife Biologist, Silviculturist

**Status:** EA Complete

**Completion Date:** FY-09

**Action:** Update Forest Plan standard WL-11 to reflect most recent direction in the Florida Fish and Wildlife Commission Gopher Tortoise Management Plan.

**Responsibility:** Forest Planner, Wildlife Biologist, Silviculturist

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**Status:** EA Complete  
**Completion Date:** FY-09

**Action:** Update Forest Plan standard RE-4 to clarify applicable situations for locating trails based on most recent direction in the Florida Fish and Wildlife Commission Gopher Tortoise Management Plan.

**Responsibility:** Forest Planner, Wildlife Biologist, Silviculturist  
**Status:** EA Complete  
**Completion Date:** FY-09

**Action:** Update general direction for bald eagles and standards WL-4 and WL-5 to reflect the most recent National Bald Eagle Management Guidelines.

**Responsibility:** Forest Planner, Wildlife Biologist, Silviculturist  
**Status:** EA Complete  
**Completion Date:** FY-09

**Action:** Update Flatwoods salamander guidance under standards WL-16 and WL-17 to clarify "dry periods".

**Responsibility:** Forest Planner, Wildlife Biologist, Silviculturist  
**Status:** EA Complete  
**Completion Date:** FY-09

**Action:** Update Management Area 8.2 desired condition statements and Management Area standard 8.2-3 to increase maximum clearcut size to 800 acres.

**Responsibility:** Forest Planner, Wildlife Biologist, Silviculturist  
**Status:** EA Complete  
**Completion Date:** FY-09

**Action:** Re-allocate Management Area 8.1 to Management Area 8.2.

**Responsibility:** Forest Planner, Wildlife Biologist, Silviculturist  
**Status:** EA Complete  
**Completion Date:** FY-09

## Appendix A: Interdisciplinary Team Members

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

<b>Name</b>	<b>Discipline</b>
David Harris	Forest Planner
Haven Cook	Recreation Planner
Louise Kirn	Botanist
William Carromero	Botanist
Micah Thorning	Wildlife Biologist
Debbie Casto	Fire Management Officer
Kyle Jones	Lands Program Manager
Rhonda Kimbrough	Forest Archeologist
Kathy O'Byran	Civil Engineer
Richard Shelfer	Forest Silviculturalist
Anthony Matthews	Regional Air Quality Specialist
Grey Lussier	Forest Interpretive Specialist
Kent Wimmer	FNST Coordinator
Bobby Grinstead	Fisheries Biologist
Erik Johnson	Forest Ecologist
David Borland	Forest Silviculturist