Sumter National Forest

Monitoring and Evaluation Annual Report

Fiscal Year 2003

US Department of Agriculture
Forest Service
Southern Region

Sumter National Forest

Fiscal Year 2003
Monitoring and Evaluation Report

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The photograph on the cover was taken at the Woods Ferry Recreation Area on the Enoree Ranger District in western Chester county looking at the Broad River.

Woods Ferry lies within a beautiful wooded floodplain surrounded by upland pine woods and maturing hardwood forests.

The recreation area takes its name from Matthew Woods, who acquired the land in 1817 and constructed a ferry for horse and buggy traffic. Here, Confederate cavalry under Gen. Wade Hampton crossed the river to harass Sherman's flank during his historic march through the South. In later years, the area was heavily logged, farmed, and grazed. In 1936 the Forest Service acquired the land. Extensive erosion control and reforestation work was started at that time and continues today.

Acronyms

ASQ	Allowable Sale quantity
ATV	All-terrain vehicle
BCD	Biological Conservation Database
BMP	Best Management Practices
BVET	Basin-wide Visual Estimation
DBH	Diameter at breast height
EPA	Environmental Protection Agency
FS	Forest Service
FY	Fiscal Year
GIS	Geographic Information System
IM	Inventory and Monitoring
MIS	Management Indicator Species
MMCF	Million cubic feet
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NVUM	National Visitor Use Monitoring
OHV	Off-highway vehicle
PETS	Proposed, endangered, threatened, and sensitive species
PPM	Parts per million
PM	Particulate matter
PSD	Prevention of Significant Deterioration
RPA	Resource Planning Act
SAMI	Southern Appalachian Mountains Initiative
SCDHEC	South Carolina Department of Healh & Environmental Control
SCDNR	South Carolina Department of Natural Resources
SPB	Southern Pine Beetle
T&E	Threatened and endangered
USDA	United States Department of Agriculture

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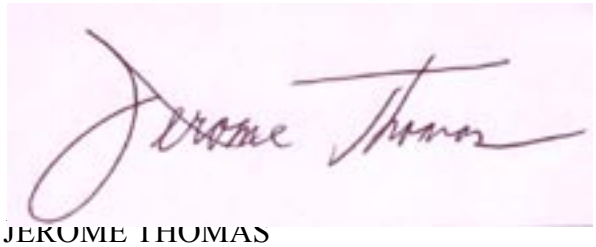
Forest Supervisor's Certification

I have evaluated the monitoring results and recommendations in this report. I have directed that the Action Plan developed to respond to these recommendations be implemented according to the time frames indicated, 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 *Land and Resource Management Plan* (Forest Plan) is sufficient to guide management activities unless ongoing monitoring and evaluation identify further need for change.



JEROME THOMAS
Forest Supervisor

September 10, 2004
Date

Executive Summary of Monitoring and Evaluation Results and Report Findings

The *Land and Resource Management Plan* (Forest Plan) provides guidance on how the Sumter National Forest will be managed. Monitoring is used to assess how well goals and objectives are being met, if standards and guidelines are being properly implemented and whether environmental effects are occurring as predicted. The following monitoring results are based on the forest plan signed in 1985. Starting in FY 2004 we will begin reporting monitoring findings based on the Revised Forest Plan.

Summary of Key Findings:

Ecosystem Condition, Health and Sustainability

The Forest Plan anticipated regenerating 4,700 acres annually across the Sumter. However, only 869 acres, or 18 per cent, of this objective were regenerated in FY 2003. The Sumter National Forest offered 758 acres of thinning harvest for sale in FY 2003. This is 27 per cent of the 2,817 acres estimated to be thinned in the Forest Plan. A total of 477 acres of salvage harvest was offered for sale.

An objective of the Forest Plan is to have about 46,300 acres or 14.5 per cent of the Sumter suitable acres as early successional habitat in the 0-10 year age class. Approximately 14,721 acres or 4.6 per cent were this age in FY 2003. Only about 2 per cent will be in this age class by 2005, unless regeneration trends change.

An objective of the Forest Plan is to have 5 per cent of the hardwood forest types in the 120+ year age class. The intent was to have an abundance of hardwood trees greater than 18 inches in diameter. Currently, 4,276 acres or 4.6 per cent of the hardwood types are 120+ years old. However, there is an abundance of trees greater than 18 inches in diameter well distributed throughout the forest.

An objective of the Forest Plan is to have at least 5 per cent of the pine forest types in the 80+year age class. The intent was to have an abundance of trees greater than 16 inches in diameter. Currently, 28,116 acres or 11.1 per cent of the pine forest type met the criteria in FY 2003.

Non-native invasive species continue to be an increasing concern on the Forest and throughout South Carolina. The forest made achievements this year, in conjunction with partners, to inventory non-native species populations, to determine trends in non-native species occurrence and distribution, and to initiate control efforts. Hemlock woolly adelgid (*Adelges tsugae*) was identified during 2001 in the Ellicott Rock Wilderness Area by entomologists from State and Private Forestry. Research has indicated there may be hope in the form of a small predatory beetle, *Pseudoscymnus tsugae* for control of the adelgid. Predatory beetles were released into the wilderness area to see how effective they are as a control agent.

Oak decline is an increasing concern especially as oak stands mature. The Andrew Pickens District in particular will likely have increased mortality in oak stands in the coming years.

The forest prescribed burned 10,105 acres in FY 2003. Prescribed burning was used to improve the diversity of understory vegetation and reduce hazardous fuel accumulations. The Forest Plan goal was to treat approximately 17,000 acres annually for fuel breaks, hazard fuels reduction, wildlife habitat improvement, control of undesirable species, disease control and site preparation.

Several new locations for threatened, endangered, and sensitive species (PETS) were identified in conjunction with project-level inventories or Forest Plan monitoring efforts.

Eighteen sites for the sensitive Oglethorpe oak were revisited on the Long Cane district, and five new locations were found. Of these sites, more than 1,714 trees were counted, mostly from ephemeral and intermittent drainages. Many of the sites were affected by disease, likely chestnut blight, which causes mortality in mature trees leading to populations consisting of primarily seedlings and saplings. Critical habitat for the only federally-listed mussel in South Carolina, Carolina Heelsplitter, was monitored on the Long Cane Ranger district, and is stable. On the Andrew Pickens district, habitat conditions for federally endangered smooth coneflower were improved on 242 acres in 2003, by tree felling and mid-story control on 22 acres, and prescribed burning on 220 acres. A total of 1,283 plants from 8 sites on the Forest were counted in 2000 and this number increased in 2003.

Surveys, inventories, plot establishment and monitoring were completed for a number of Management Indicator species (MIS) in 2003 including eastern king snake and northern dusky salamander, Webster's salamander, small whorled pogonia, smooth coneflower, brook trout, brown trout, rainbow trout, redeye bass, redbreast sunfish, striped jumprock, largemouth bass and bluegill. Eight sites for ginseng were monitored on the Long Cane district, and 86 plants were counted from likely three populations, including 24 fruiting individuals.

Sustainable Multiple Forest and Range Benefits

Timber offered for sale in FY 2003 was 2.5 million cubic feet (MMCF), well under the allowable sale quantity of 18.2 MMCF per year established in the Forest Plan. In FY 2003, timber was harvested using thinning, seed tree cut, shelterwood cut, seed tree removal cut, and salvage harvest methods. Site preparation for natural regeneration, site preparation for planting, and release work were accomplished during the year.

Old toilet facilities were replaced with new sweet-smelling toilets (SST) at two high-use sites along the Chattooga National Wild and Scenic River, and one at the popular Yellow Branch Falls Picnic Area and Trailhead.

In an effort to provide high levels of dispersed recreational opportunities and meet public demand for trails, several projects were initiated in FY 2003. On the Andrews Pickens district, a hiking/mountain bicycling trail was designed and laid out in the upstate of South Carolina with a planned implementation date for FY 2004. The Long Cane district designed and laid out a 30+ mile system of mountain bicycle/hiking trails with a planned implementation date for late FY 2004 or early FY05. On the Enoree district survey, design and contract packaging work was completed for several major projects on the Sumter Passage of the cross-state Palmetto Trail slated for implementation in FY 2004.

Motorized trails continue to be the highest used trails on the piedmont districts.

The SWECO (trail construction dozer) has been used to improve sections of the Rocky Gap Horse Trail on the Andrew Pickens Ranger District through a combination of trail relocation and reconstruction work.

Scenery management reviews indicate the Forest Plan visual quality objectives are being met.

Direction for the Chattooga Wild and Scenic River is being followed and management activities are maintaining the free-flow, water quality and outstandingly remarkable values of the river.

For the 8 other rivers eligible for wild and scenic status management activities are protecting the free-flow, water quality and outstandingly remarkable values

Plans are to complete the ***Sumter National Forest Cultural Resources Overview*** in Fiscal Year 2004/2005 providing a framework for future heritage resources management.

Other

The federal government acquired an additional 720 acres.

The Francis Marion and Sumter National Forests participated in the National Visitor Use Monitoring (NVUM) project from October 2001 through September 2002. This project estimated visitor use for all activities including recreational facilities and trails. Sampling strategy does not allow us to separate use between the two forests. Visitor use on both forests for fiscal year 2002 was 1.1 million national forest visits. There were 1.5 million site visits and an average of 1.3 site visits per national forest visit.

There were approximately 52,864 wilderness site visits. (Due to sampling method it is not possible to isolate the use for just Ellicott Rock. However, because of the wet conditions of the wilderness on the Francis Marion the majority of this use estimate is in Ellicott Rock Wilderness.)

Chapter 1. Introduction

The Sumter National Forest is 364,704 acres in the central piedmont and western mountains of South Carolina. It is composed of three districts: Andrew Pickens, Enoree, and Long Cane. The *Land and Resource Management Plan* (Forest Plan) approved on December 2, 1985, guides management activities. These lands are managed to provide goods and services for timber, outdoor recreation, water, wildlife, fish, and wilderness following multiple-use goals and objectives.

Monitoring and evaluation is an integral part of the Forest Plan and is designed to ensure the goals and objectives are being achieved, standards and guidelines are being followed, and environmental effects are occurring as predicted. Monitoring and evaluation determines if the forest is moving toward or achieving the desired conditions for resources.

Monitoring is conducted by field reviews of projects and by inventory and survey work carried out on annually. Forest Service resource specialists, universities, state resource agencies, and contract specialists accomplish this work.

Ellicott Rock Wilderness
Andrew Pickens Ranger District

Chapter 2. Monitoring Results and Findings

Issue 1. Ecosystem Condition, Health and Sustainability

Sub-Issue 1.1 - Biological Diversity

1. Vegetation Management

Determine if the regeneration of desired tree species is being achieved.

Most regeneration on the Sumter National Forest uses naturally occurring seedlings and saplings, and sprouts from stumps and roots. Almost all stands recently regenerated are pine stands. The desired composition of replacement stands is a mixture of pines, oaks and hickories. This mixture is being achieved by retaining larger mast-producing hardwoods and hardwood inclusions within pine stands during harvest and site preparation activities and by allowing natural oak and hickory regeneration to remain a component of the reforested stands.

A total of 869 acres of early successional habitat were established in FY 2003. The Sumter's planned regeneration is approximately 4,700 acres annually.

Determine if the vegetation is being managed according to the Forest Plan's requirements and making progress toward achievement of the desired future condition for vegetation.

The Forest Plan objective is to have 46,300 acres or 14.8 per cent of the forest's suitable acres in the 0-10 year age class. In 2003, 14,721 of these acres were in the 0-10 year age class, which is 4.6 per cent of the land base determined to be suitable for timber production. Only about 2 per cent of the Sumter National Forest will be in the 0-10 year age class by 2005 given current stand ages, unless regeneration trends change.

Less early successional habitat is being created through even-aged forest regeneration than is desired. The amount of shrub/seedling habitat is declining across the Forest as the number of acres in the 3-10 year age class declines. Downward trends of several management indicator species indicate continued decline of habitat quality and distribution of early successional habitat conditions.

The Sumter offered 758 acres of thinning harvest for sale in FY 2003. The Forest Plan estimated that an average of 2,817 acres would be thinned each year.

One long-term Forest Plan objective is to have 5 per cent of the hardwood forest type in the 120+ year age class. In FY 2003, 4,276 acres (4.6 per cent) of the hardwood and hardwood/pine forest types were in the 120+ year age class. Another Forest Plan objective is to provide a minimum of 5 per cent of the pine forest types in the 80+ year age class to ensure an abundance of trees 16 inches in diameter at breast height (DBH) or greater. In 2003, 11.1 per cent (28,116 acres) were in the 80+ year age class. The rate of regeneration harvest over the last 5 years (284 acres/year) has pine and pine/hardwood forest types on lands suitable for timber production on an 800+ year rotation.

Table 2-1 displays the prescribed burning program on the forest. Prescribed burning is used to reduce the amount of hazardous fuels in the forest and to achieve specific vegetation and wildlife management objectives. Prescribed burning especially when used in combination with commercial thinning is effective at achieving wildlife objectives. Hazardous fuel treatments reduce the intensity and spread of wildland fires.

While the use of prescribed fire can help keep many understory plants in a state of early succession and is very beneficial to wildlife, this tool does not significantly increase the number of acres in early successional habitat.

Table 2-1. Sumter National Forest Prescribed Burning Accomplishments (acres)					
District	**FY 1999**	**FY 2000**	**FY 2001**	**FY 2002**	**FY 2003**
Enoree	9,938	11,476	11,546	13,672	5,777
Long Cane	5,743	5,595	3,491	3,825	2,398
Andrew Pickens	1,765	3,200	5,230	4,035	1,930
Total	117,446	20,271	20,267	21,532	10,105

Table 2-2 summarizes monitoring results related to vegetative objectives (page IV-22).

Table 2-2. FY 2003 Vegetation Management Results and Forest Plan Objectives.		
Objective	**FY 03 Status (in acres)**	**Change from FY02 to FY03**
37,326 acres of Southern Yellow Pine Types ≤ 10 years of age	14,574	Decrease from FY 02. FY 2003 is 39% of plan objective
4,503 acres of mixed or hardwood types ≤ 10 years of age	320	Little change from FY 02.
8,333 acres of pine types ≥ 80 years of age	28,116	Increasing
2,817 acres/year intermediate harvest	758	Increase of 752 acres from FY 02
4,700 acres/year regeneration harvest	265	Increase of 265 acres from FY 02

2. Management Indicator Species

National Forests use Management Indicator Species (MIS) as a tool for identifying specialized habitats, formulating habitat objectives and developing standards and guidelines to provide for a diversity of wildlife, fish and plant habitats. MIS are used to address issues related to biological diversity, as well as management of wildlife and fish for commercial, recreational, or aesthetic values or uses (FSM 2621.1). Habitat and population trends are evaluated within the context of Forest Plan requirements, risks to the species and probability of species and habitat persistence. Recommendations by resource specialists are made to shift management emphasis or amend management or monitoring in cases where the data are either inclusive or suggest that the species or habitats are declining to a point that species persistence cannot be assured. This ongoing analysis offers a larger context for evaluation of biodiversity at the landscape scale, which can be used to strengthen project development, effects analysis and Forest Plan revision efforts.

A Forest-wide MIS document was prepared for the Francis Marion and Sumter National Forests in 2001. It is contained as a separate document available on our web site, (http://www.fs.fed.us/r8/fms) or a copy can be mailed upon request.

Chapter 3 of this report gives the status of action items related to MIS. A status summary of select MIS species (by habitat grouping) collected from ongoing monitoring efforts follows.

Upland Savannas and Woodlands

Eastern King Snake

No Eastern king snakes were collected during 4 years of monitoring by the Savannah River Ecology Laboratory, though one was seen crossing the road on the Long Cane district (Metts and Gibbons, final report, June, 2003). Populations for the species are thought to be stable on the forest. “The fact that other woodland snakes, such as worm snakes and ringneck snakes were abundant serves as a satisfactory indicator of a high quality habitat.” No bottomland hardwood stands were logged or site prepared on the Forest in FY 2003.

Eastern King Snake

Smooth Coneflower

On the Andrew Pickens, habitat conditions for smooth coneflower were improved on 220 acres in 2003; by tree felling and mid-story control on 22 acres; and prescribed burning on 220 acres. A total of 1,283 plants from 8 sites on the forest were counted in 2000 and this number increased in 2003.

Mixed Mesic Forests/Basic Mesic Forests

Mesic deciduous forests are not very abundant (<10%) but are relatively common (36,000 acres) on the Sumter National Forest. The following MIS associated with mixed mesic forests were monitored in FY 2003.

Webster's Salamander

Webster's salamanders occur in small and widely dispersed populations throughout the Stevens Creek drainage of the Long Cane Ranger District (Gibbons et. al., 2003). Individuals from the Savannah River Ecology Laboratory captured 253 Webster's salamanders on the Long Cane District during a 2-year period beginning in 2001, with an average capture rate of 8.5 salamanders/person hour (Gibbons e. al., 2003). Of the 38 species of amphibians and reptiles captured during the course of a 2-year study, Webster's salamanders were one of the four most abundant species found on the Long Cane Ranger District (Metts and Gibbons, final report, 2003).

Small Whorled Pogonia

Small whorled pogonia populations on the Andrew Pickens Ranger District continued to decline in 2003 to eight plants from four sites on the district. Small whorled pogonia is exhibiting declines elsewhere throughout its range, from southern Maine and New Hampshire, to northern Georgia, and these declines are particularly pronounced within the Southern Appalachians (Meeting Notes, USFWS Asheville Office, Jan.22, 2004).

Many states are attempting habitat management, to increase the availability of light on the forest floor (example in Maine and New Hampshire). Habitat management efforts initiated in 2001 resulted in a small increase in the number of plants in 2002.

Ginseng

Eight sites for ginseng were monitored on the Long Cane district, and 86 plants were counted from likely three populations, including 24 fruiting individuals. This species has been threatened historically by illegal collection activities.

Streamside Forests

Approximately 63,000 acres of streamside forest occur on the Sumter National Forest. The following MIS associated with these forests was monitored in 2003.

Northern Dusky Salamander

Monitoring for northern dusky salamander was initiated in partnership with the University of Georgia Foundation – Savannah River Ecology lab in 2000, and was conducted monthly on 14 sites distributed throughout the Sumter National Forest through 2004. Northern dusky salamanders were found at all six of the sites on the Enoree, four on the Long Cane, but were determined to be outside the species range on the Andrew Pickens (Metts and Gibbons, 2003). salamanders, blackbelly salamanders, and Ocoee salamanders) were abundant throughout the Andrew Pickens (Metts and Gibbons, 2003). Of the 51 species

of amphibians and reptiles captured during the course of the monitoring study, northern dusky salamanders were one of the four most abundant species captured on the Enoree. Populations and habitat for northern dusky salamander are thought to be stable on the forest.

Cold Water Stream

Brook Trout

Population was monitored on one brook trout stream on the Andrew Pickens Ranger District in 2003 at two fish survey sites established in Pigpen Branch. Brook trout were sampled at both sites. No other trout species were sampled in 2002 or 2003; however, brown trout were present at the downstream site in 2001 surveys. In addition to MIS, all species that were captured in the samples sites were recorded to get an accurate assessment of the aquatic community. Creek chub and bluegill sunfish were captured at both sites. The origin of these two species is more than likely the private pond in the headwaters of Pigpen Branch. These two sites will be surveyed again in 2006. Population monitoring was also conducted in Jack Creek, upstream from a barrier that excludes non-native trout. Four-year classes were present, indicating successful reproduction in the stream.

Five cold-water streams were inventoried to determine brook trout distribution. The streams included Moody Creek, Bee Cove and an unnamed tributary and Wilson Creek in the Cheohee Creek watershed; and Howard Creek and an unnamed tributary and Limber Pole Creek in the Whitewater River watershed. Brook trout were captured in Bee Cove and a section of Howard Creek. There were no brook trout captured in upper Howard Creek where they had been stocked in previous years or in the unnamed tributary of Howard Creek. Wilson Creek and the unnamed tributary to Bee Cove contained no fish. Rainbow trout were captured in Moody Creek and Limber Pole Creek. Moody Creek once contained brook trout.

Electrofishing efforts in King Creek continued to result in the capture of brown trout only. No brook trout were sampled from the stream. Brook trout populations are declining across the forest.

Rainbow Trout and Brown Trout

Monitoring was conducted in Tamassee Creek in 2003. Two sites were established in 2001 on each stream to survey for these species. Both sites were sampled in 2003. Rainbow trout were sampled at the upper site in 2001 but not in 2002 and 2003. Rainbow trout were sampled in the lower site during 2002, but not in 2001 and 2003. Brown trout were sampled in the downstream site only during 2003. In addition to MIS, all species that were captured in the sample sites were recorded to get an accurate assessment of the aquatic community. Tamassee Creek will be monitored again in 2006.

Three sites established by the SC Department of Natural Resources (SCDNR) on the east fork Chattooga River were surveyed in 2003. Brown trout and rainbow trout were sampled at the lower site, the middle site near the hatchery and at the upper site near the state boundary.

Habitat inventory using the basin-wide visual estimation technique (BVET) was conducted in 2003 in one stream, Cedar Creek. The purpose of this survey was to begin a baseline inventory of stream conditions in the Chauga River watershed. Results will describe pool and riffle habitats, substrate condition, large woody debris abundance, and other stream habitat conditions.

Cool Water Stream

Redeye Bass, Redbreast Sunfish and Striped Jumprock

Monitoring was also conducted in Tamassee Creek in 2003 for redeye bass, redbreast sunfish and striped jumprock. Two sites were established in 2001 on each stream to survey for these species. Both sites were sampled in 2003. Only striped jumprock and redbreast sunfish were sampled at both sites in 2001, 2002 and 2003.

Three sites established by the SCDNR on the East Fork Chattooga River were surveyed in 2003. Striped jumprock and redbreast sunfish were only found at the lower site closest to the confluence with the Chattooga River.

An additional site established by the SCDNR on Townes Creek, a tributary to Cheohee Creek was monitored in 2003. Redbreast sunfish and striped jumprock were captured at this site. An inventory was completed on Yellow Branch, a tributary to Coneross Creek. Striped jumprock were found in this stream.

Warm Water Stream

Striped Jumprock, Redbreast Sunfish

Monitoring was conducted for striped jumprock and redbreast sunfish on 6 streams at 11 sites on the Enoree Ranger District and on 8 streams at 15 sites on the Long Cane Ranger District. Redbreast sunfish occurred in all six of the streams on the Enoree. Striped jumprock did not occur in any of these sampled streams. On the Long Cane, redbreast sunfish occurred in five of the eight streams and striped jumprock were found in one of those streams. In addition to MIS, all species that were captured in the samples sites were recorded to get an accurate assessment of the aquatic community. The majority of these streams exhibited signs of drought effects in 2001 and 2002. In 2003, the area experienced more rainfall and the streams contained higher levels of water. A portion of these streams will be monitored again in 2004 to document changes that may have occurred in species composition and populations due to weather condition influences.

Three additional streams were inventoried on the Enoree Ranger District in 2003. These include Fosters Branch, Means Branch and Quarters Branch, tributaries of the lower Enoree River. Redbreast sunfish were present in all three streams. In addition to MIS, all species that were captured in the samples sites were recorded to get an accurate assessment of the aquatic community.

Warm Water Impoundment Communities

Largemouth Bass and Bluegill Sunfish

District personnel on the Long Cane, in coordination with SCDNR biologists, monitored largemouth bass and bluegill sunfish in Lick Fork Lake and Parson's Mountain Lake.

District personnel on the Enoree monitored largemouth bass and bluegill sunfish in Johns Creek Lake, Sedalia Lake, Macedonia Lake, Wildcat Lake, and Pittman Lake.

These populations are managed for recreational fishing. District personnel recommended no supplemental stocking.

In-Stream Habitat

In-stream habitat increased in FY 2003 due to increased rainfall. Population effects from increased habitat may be seen in FY 2004.

3. Threatened and Endangered Species

Determine the progress toward recovery objectives for Threatened and Endangered (T&E) species and conservation objectives for sensitive species.

The Forest Service relies on the expertise of numerous individuals across the state to assist in the inventory of proposed, endangered, threatened and sensitive (PETS) species. These species are tracked using the biological conservation database (BCD), which is maintained by the South Carolina Department of Natural Resources, Heritage.

Several new locations for PETS were identified in conjunction with project-level inventories or Forest Plan monitoring efforts. Eighteen sites for the sensitive Oglethorpe oak were revisited, and five new locations were found. Of these sites, more than 1,714 trees were counted, mostly from ephemeral and intermittent drainages: 10 sites contained more than 25 trees. We were unable to relocate six of the sites. Many of the trees show signs of disease, likely chestnut blight, which causes

mortality of mature trees leading to populations consisting mostly of seedlings and saplings.

The Forest Plan tiers to existing recovery plans for Threatened and Endangered (T&E) species and Forest Service Manual direction for viability for sensitive species. Specific requirements for protection are included in standards and guidelines in the Forest Plan.

Table 2-3 summarizes the status of T&E species on the forest and progress toward recovery.

Sub-Issue 1.2 – Forest and Range Health

Air Quality

What is the ambient monitoring data telling us about air quality?

Work performed for the Southern Appalachian Mountains Initiative (SAMI) presented numbers for ozone exposures that may result in a 10 per cent growth loss to several plant species. Table 2-4 allows a comparison

Table 2-3. Threatened and Endangered Species Status and Progress toward Recovery

Species	Progress Toward Recovery in 2003	Status
Bald Eagle	Inventory Monitor	Stable in the state. One nest known from the Long Cane, though no eagles have been seen there since 1999. One new nest confirmed from the Enoree in 2002.
Carolina Heelspliter	Inventory Monitor	Habitat on the Long Cane is stable. The forest/district with partners to develop management strategies for aquatic species in Turkey and Upper Stevens Creek watersheds in 2003.
Florida Gooseberry	Inventory Monitor	Habitat is stable on the Long Cane. The one population on the Long Cane Ranger District exhibited small declines in 2003 due to deer browsing.
Persistent Trillium	Inventory	Not found on the forest to date. Possible habitat on the Andrew Pickens .
Red-Cockaded Woodpecker	Inventory	Extirpated from the Sumter.
Relict Trillium	Inventory	Not found on the forest to date.
Small Whorled Pogonia	Inventory Monitor Habitat Management	Habitat is stable on the Andrew Pickens. The species declined on the forest from 53 plants in 1995 to 15 plants in 2000 to 8 plants at four sites monitored in 2003. Research in the Southern Appalachians to investigate species declines throughout the Southern Appalachians is needed.
Smooth Coneflower	Inventory Monitor, Habitat Management	Habitat is increasing on the Andrew Pickens. Habitat management, including prescribed fire and mid-story removal, was conducted on 220 acres in 2003.

of the results found at four monitoring sites (Abbeville, Edgefield, Oconee and Union Counties) with the results listed in the SAMI report. Growth losses to vegetation are most likely to occur when there is both high seasonal ozone exposures (the W126 values from the table) and when ozone exposure on an hourly basis exceeds 0.100 parts per million (ppm, also called N100).

Taking these two parameters into consideration, some years there has been a possibility that extremely sensitive species on the Enoree may have a 10 per cent growth loss. Ozone exposures are greater on the Andrew Pickens and Long Cane. In 2003, the cool and wet conditions were unfavorable for ozone formation and seasonal exposures were the lowest on record (Table 2-4). It is unlikely that ozone is causing 10 per cent or more growth loss for any of the southern pine species.

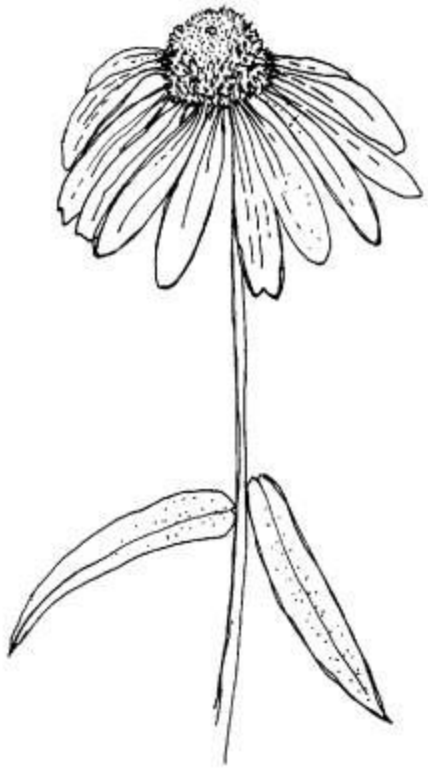


Table 2-4. Seasonal Ozone Exposures at Four Monitoring Sites in South Carolina

County (Year)	Site ID	Max.	W126	N100*
Abbeville				
(1997)	450010001	0.099	29.417	0
(1998)	450010001	0.120	50.134	14
(1999)	450010001	0.106	44.710	13
(2000)	450010001	0.104	42.708	1
(2001)	450010001	0.106	34.555	4
(2002)	450010001	0.115	43.777	5
(2003)	450010001	0.090	23.708	0
Edgefield				
(1997)	450370001	0.099	29.381	0
(1998)	450370001	0.122	55.456	26
(1999)	450370001	0.110	40.016	5
(2000)	450370001	0.093	35.315	0
(2001)	450370001	0.087	25.949	0
(2002)	450370001	0.109	34.340	13
(2003)	450370001	0.079	9.342	0
Oconee				
(1997)	450730001	0.096	52.525	0
(1998)	450730001	0.108	63.837	17
(1999)	450730001	0.102	74.658	3
(2000)	450730001	0.098	40.142	0
(2001)	450730001	0.092	44.561	0
(2002)	450730001	0.106	56.937	4
(2003)	450730001	0.083	32.006	0
Union				
(1998)	450870001	0.098	31.034	0
(1998)	450870001	0.111	40.252	6
(1999)	450870001	0.116	35.451	7
(2000)	450870001	0.096	32.895	0
(2001)	450870001	0.100	31.892	1
(2002)	450870001	0.108	34.086	3
(2003)	450870001	0.091	18.697	0
	Test Species			
Extremely sensitive	Black cherry and yellow poplar		≥6.51	≥1
Sensitive	Whorled-wood aster and black cherry		≥7.68	≥10
Moderate	Yellow poplar		≥24.21	≥33
Resistant	Red maple		≥85.35	≥245

* Number of hours greater than or equal to 0.100 parts per million.

Particulate matter is the second pollutant of concern on the forest because it can obscure visibility along highways, and the fine particles can impact human health if they penetrate deep into the lungs in sufficient quantity. There are two sizes of particulate matter of concern: 1) particulate matter that is 10 microns or smaller in size (PM_{10}), and 2) fine particulate matter that is 2.5 microns and smaller in size ($PM_{2.5}$). The SC Department of Health and Environmental Control (SC DHEC) monitor both types at several locations near the Sumter (Table 2-5 and 2-6). Furthermore, particulate matter is also measured by the IMPROVE program at Shining Rock Wilderness, which is 20 miles north of the Andrew Pickens. In the year 2003, the maximum 24-hour PM_{10} concentration in Aiken County was 36 micrograms per cubic meter (ug/m^3), while the annual average was 18 ug/m^3 (Table 2-5).

Table 2-5 Monitoring Results for Particulate Matter 10 Microns (PM_{10}) and Smaller in Size for the Year 2003*

County	Site ID	Maximum 24-hour (ug/m^3)	Annual Average (ug/m^3)
Aiken	450030003	36	18

*The National Ambient Air Quality Standard (NAAQS) is violated if the annual average is 50 ug/m^3 or greater, or the maximum 24-hour average for the 99th per centile during a 3-year period is 150 ug/m^3 or greater.

The PM_{10} values recorded near the forest are below levels of concern for human health for both the 24-hour average (150 ug/m^3) and annual average (50 ug/m^3). Table 2-6 presents the results for the fine particles. Maximum 24-hour fine particle concentrations are below the level of concern for human health (65 ug/m^3); however, the annual average fine particle concentrations are below the levels considered unhealthy for people (15 ug/m^3). The range in the 1995 through 2001 average reconstructed fine particle mass at Shining Rock Wilderness was 7.43 to 9.06 ug/m^3. No particulate matter data were available from the IMPROVE website for Shining Rock Wilderness for the years 2002 and 2003 when this analysis was performed.

What is visibility like near the forest?

The closest visibility monitoring sites to the Sumter is at Shining Rock Wilderness in North Carolina. Monitoring the amount of light scattering, and the amount and type of fine particles ($PM_{2.5}$) found near the Sumter has occurred since 1994. A uniform haze is the primary type of visibility impairment observed in upstate South Carolina and the annual average distance a person can see is about 50 miles (based upon 1995 through 2001 fine particle data). Visibility impairment also reduces how clearly a person can see the color and the texture of the mountains. The uniform haze appears as a white or gray veil, and indicates sunlight is being scattered. Visibility

Table 2-6 Monitoring Results for Particulate Matter 10 Microns (PM_{10}) and Smaller in Size for the Year 2003*

County	Site ID	2001		2002		2003	
		Maximum 24-hour (ug/m^3)	Annual Average (ug/m^3)	Maximum 24-hour (ug/m^3)	Annual Average (ug/m^3)	Maximum 24-hour (ug/m^3)	Annual Averag (ug/m^3)
Edgefield	450370001	32	12.6	31	12.2	31	12.1
Greenwood	450470003	31	13.6	32	12.8	31	12.5
Oconee	450730001	43	11.2	28	10.6	35	9.5

* The National Ambient Air Quality Standard is violated if the average of 3-years of annual means is 15 ug/m^3 or greater (multiple community oriented monitors can be averaged together), or the 3-year average of the 24-hour concentration for the 98th per centile (using the maximum population oriented monitor in an area) is the 65 ug/m^3 or greater.

impairment is greatest in the summer months (19 to 34 miles), whereas the best visibility conditions usually occur in the winter (63 to 84 miles). The annual average fine particle mass ($PM_{2.5}$) measured at Shining Rock varies by season with a range between 3.5 ug/m^3 (fall) and 15.6 ug/m^3 (summer). The IMPROVE program routinely determines what types of compounds are found in the fine particles. As is found throughout the Eastern United States, sulfates comprise the majority of the fine particle mass (the annual average is 63 to 79 per cent) at Shining Rock. Most of the sulfates impairing visibility originated as sulfur dioxide emissions from coal-fired power plants and were transformed to fine particles of sulfate on warm sunny days.

What are the levels of pollutant emissions from Forest Service activities?

Prescribed fires are probably the most significant management activity emitting air pollution. Research results indicate there are approximately 22 pounds for fine particulate matter ($PM_{2.5}$) emitted for each ton of vegetation consumed. Typically, the prescribed fires on the Sumter consume 3 tons of fuel for each acre treated. Cool and wet weather conditions resulted in less prescribe fire treatment in FY 2003 then the previous five years. The decrease in prescribed fire emissions did not appear to significantly alter measured fine particle concentrations measured in Edgefield, Greenwood, and Oconee counties (Table 2-7).

Table 2-7. Sumter National Forest Emissions of Fine Particulates (tons per year)

FY99	FY00	FY01	FY02	FY03
576	669	669	710	333

No data have been compiled to estimate the amount of pollutant emission from other Forest Service activities on the Sumter National Forest. Emission estimates should also be estimated for the following Forest Service activities: heavy-duty equipment use and two-cycle engines.

How have pollutant emissions changed near the forest?

Our nation has had significant reductions in air pollution emissions through the Clean Air Act since the 1970s. The 2002 Forest Monitoring reported the 1990 and 2010 emission estimates in the Southern Appalachian Mountain Initiatives (SAMI) database. Another emissions inventory for the year 1999 has been prepared by the southeastern Regional Haze organization called Visibility Improvement State and Tribal Association of the Southeast (VISTAS). Also, another future year inventory for the year 2010 was prepared by the Environmental Protection Agency (EPA) to understand how emissions reductions at coal-fired power plants would change with the Bush Administration's Clear Skies proposal. In December 2003, the EPA proposed the Interstate Air Quality Rule that has similar reductions as the Clear Skies proposal. In 1999, the VISTAS emissions inventory listed 20-point sources of pollution that emitted 5,000 tons per year or more of nitrogen oxides and/or sulfur dioxide and are within 120 miles of the Sumter. Recent and future emission estimates for the 11 counties intersecting the forest (Table 2-8), as well as all other counties within 120 miles (Table 2-9) were also examined. Within the 11 counties the emissions of all five types of primary pollutants are expected to decrease with implementation of the Interstate Air Quality Rule by 2010. The volatile organic compound listed in Tables 2-8 and 2-9 are from people's activities and do not include the larger component from vegetation (especially trees). Also, there are large uncertainties with the fine particle estimates. The emission estimates in Table 2-10 do not adequately reflect the total emissions from forestry prescribed fires (and agricultural fires) in the 11 counties (490 tons in the year 1999), when the results are compared to Table 2-8. Currently, VISTAS and the EPA are working to adequately estimate fine particulate matter emissions from prescribed fires and wildfires.

Table 2-8. Emission estimates (tons per year) for 11 counties intersecting the Sumter National Forest using the VISTAS estimates for 1999 and Blue Skies with control for 2010.					
Estimates (Year)	**Volatile Organic Compounds**	**Nitrogen Oxides**	**Sulfur Dioxide**	**Particulate Matter (PM_{10})**	**Fine Particles ($PM_{2.5}$)**
1999	39,684	29,942	3,911	42,438	11,900
2010	25,967	22,008	3,919	18,429	8,156

Table 2-9. Emission estimates (tons per year) for the counties within 120 miles of the Sumter National Forest using the VISTAS estimates for 1999 and Blue Skies with control for 2010.					
Estimates (Year)	**Volatile Organic Compounds**	**Nitrogen Oxides**	**Sulfur Dioxide**	**Particulate Matter (PM10)**	**Fine Particles (PM2.5)**
1999	1,391,920	1,558,501	1,501,298	1,204,952	389,305
2010	1,153,096	1,017,609	1,319,029	616,153	276,660

Emissions of air pollution from counties within 120 miles are likely to have an impact on the air quality of the Sumter. Table 2-9 shows the future emission estimates of all five types or primary pollutants are likely to decrease by the year 2010 with the implementation of the Interstate Air Quality Rule. Therefore, fine particle concentrations measured in the atmosphere are likely to decrease as well as visibility is likely to improve by 2010 since sulfur dioxide emissions will decrease; while ozone exposures will also be less with decreasing nitrogen oxide emissions.

Is any portion of the forest located in an area designated as non-attainment of the National Ambient Air Quality Standard?

Currently, all portions of the Sumter National Forest meet National Ambient Air Quality Standards (NAAQS) for all criteria pollutants. Table 2-12 shows the fourth highest 8-hour average for the monitoring season (current NAAQS). Assuming the results are representative of certain portions of the forest, then there may be periods of time when people visiting the Sumter are exposed to unhealthy amounts of ozone, especially if they are involved in vigorous exercise. However, the Environmental Protection Agency (EPA) is the responsible agency to designate any area as non-attainment for ozone, and the April – October ozone data for the years 2001–2003 were used to determine if an area was attaining the ozone standard. An area is designated as non-attainment for ozone if a monitoring site had a 3-year average of the fourth highest 8-hour average of 0.085 ppm or greater. The cool and moist weather conditions in 2003 reduced the 3-year 8-hour ozone average (Table 2-10), which resulted in the EPA (on April 15, 2004) classifying all counties occupying a portion of the Sumter as attainment.

A NAAQS also exists for fine particulates and the results in Table 2-8 suggest no portion of the Sumter will be designated as non-attainment for fine particles. The EPA is expected to announce the areas designated as non-attainment for particulate matter on December 15, 2004.

If, any portions of the forest are ever designated as non-attainment for one or more criteria pollutants, then this will invoke the General Conformity Rules. The General Conformity Rule states that permission must be received from the air pollution control agency before a project can be approved, unless the total emissions from the proposal are considered insignificant.

Table 2-10. Summary of Ozone Monitoring Data for the National Ambient Air Quality Standard *

Monitor Location (County)	Year	Fourth highest 8-hour average	3 Year Average
Abbeville	1997	0.078	
Abbeville	1998	0.091	
Abbeville	1999	0.090	0.086
Abbeville	2000	0.085	0.089
Abbeville	2001	0.082	0.086
Abbeville	2002	0.088	0.085
Abbeville	2003	0.077	0.082
Edgefield	1997	0.078	
Edgefield	1998	0.091	
Edgefield	1999	0.086	0.085
Edgefield	2000	0.079	0.085
Edgefield	2001	0.077	0.080
Edgefield	2002	0.094	0.083
Edgefield	2003	0.068	0.080
Oconee	1997	0.080	
Oconee	1998	0.093	
Oconee	1999	0.087	0.087
Oconee	2000	0.082	0.087
Oconee	2001	0.079	0.083
Oconee	2002	0.094	0.085
Oconee	2003	0.079	0.084
Union	1997	0.082	
Union	1998	0.087	
Union	1999	0.085	0.085
Union	2000	0.079	0.084
Union	2001	0.079	0.081
Union	2002	0.085	0.081
Union	2003	0.078	0.081

* The proposed ozone standard would be violated at a site is the 3-year average of the fourth highest 8-hour average ozone concentration is 0.085 ppm or higher.

How many applications for new sources of air pollution were reviewed in 2003?

The Forest Service is required under the Clean Air Act Amendments of 1977 to advise the appropriate State or Local air pollution control agency if any Class I areas under its management will be adversely impacted by a new source of pollution. Reviewing and commenting on Prevention of Significant Deterioration (PSD) applications accomplish this work. The Class I areas (managed by the Forest Service) where emissions from the upstate of South Carolina could impact are Joyce Kilmer/Slickrock Wilderness, Linville Gorge Wilderness, and Shining Rock Wilderness.

These three areas, along with other Class I areas in the United States, are

1. to receive the greatest protection from increases in pollution from new sources of air pollution,
2. not to have an adverse impacts occur to the air quality related values, and
3. to meet the national goal to protect and improve visibility in the Class I area.

The forest completed review on three applications in FY 2003 – Michelin Tires, Broad River Energy Center and Rainey Power Generation. Two applications were also withdrawn in FY 2003 — Cherokee Falls Development Company Project and Greenville County Power Project. We anticipate reviewing more new sources in the future as the national economy improves; especially since there is a national need to increase electrical generation to meet consumer demands.

Forest Pests

Determine if insects, disease, and noxious weeds have increased to damaging levels.

Southern pine beetle (SPB) populations returned to endemic levels across the Sumter in the spring of 2003. Other native forest pest and disease problems remained at endemic levels. Oak decline is an increasing concern, as oak stands mature, especially at advanced ages. The Andrew Pickens in particular will likely have increased mortality in oak stands in the coming years because of oak decline.

The spread of noxious and invasive exotic plants is an increasing threat to native biodiversity and forest health. Invasive species are defined as alien species whose introduction does or is likely to harm human health or have adverse economic or ecological impacts. Forests in the Southern Region began implementing a regional noxious and invasive weed strategy in June 1999. The Regional Forester approved a list of plants considered invasive in the Southern Region in May 2001. Exotic invasive species identified on this list becoming an increasing problem on the Sumter National Forest include autumn olive, nonnative roses and wisteria, kudzu, tall fescue, Nepalese browntop, Chinese lespedeza and Chinese privet. Preliminary planning work has identified about 340 acres to be treated on the piedmont districts (Enoree and Long Cane) over the next few years using a combination of manual, herbicide and prescribed fire to eliminate a variety of plant species. This is the start of a program to control and eliminate the spread of invasive plants and restore native vegetation.

In 2001, hemlock wooly adelgid (*Adelges tsugae*) was identified in the Ellicott Rock Wilderness Area and at Burrell's Ford by entomologists from State and Private Forestry. This exotic forest pest was first reported in the western US in the 1920s and in the eastern US in the 1950s. Today, its range is spreading rapidly causing extensive hemlock decline and tree mortality in hemlock forests throughout the East. Research has indicated there may be hope in the form of a small predatory beetle, *Pseudoscymnus tsugae* for control of this insect. These predatory beetles were released among affected hemlocks to see how effective they are as a control agent. Efforts are under way to expand this biological control and release more into the wilderness area.

Sub-Issue 1.3 – Watershed Condition

Chinese Privet, Woods Ferry Recreation Area, Enoree Ranger District

Determine if soil and water resources are being conserved and ensure that there is no permanent impairment of site productivity.

Many activities receive some soil and water specialist review to ensure consistency with legislation, orders (e.g., EO 11988 and 11990), direction and other soil and water resource concerns. More time is given to activities that have the potential to adversely affect wetlands, floodplains, streams, riparian areas and steep or eroded slopes. Area and watershed level analyses continue to provide a broader scale review that can help identify issues and project level

work to support restoration or development of desired conditions. For most activities, the GIS databases are consulted for soil series, soil limitations, streams, estimated riparian extent, etc. When activities may impact problem soils, wetlands or other waters of the United States, advice is sought and obtained from Forest specialists. All activities are consistent with Best Management Practices (BMP) and National and Regional Soil Quality Standards. Activities requiring 404 (Dredge and Fill) and 401 (Water Quality Certification) permits are obtained per the Clean Water Act.

Native plant work is being accomplished in cooperation with SCDNR, USDA Natural Resource Conservation Service (NRCS), South Carolina Native Plant Society, Clemson University, Tall Timbers Research station and others. Primary goals under the cooperative agreement include collecting and using native plants from within the ecotype (physiographic areas) for erosion control and developing seed production areas. Native seed production areas continue to be established on all the districts to use in establishing native grasses and trees to stabilize and improve soil conditions. Monitoring of the Best Management Practices for Forestry conducted by the SC Forestry Commission indicates practices on National Forests have fully implemented the BMP on the areas sampled including those that relate to protecting soil productivity. In FY 2002, agreement with the SC Forestry Commission was reached to conduct BMP compliance checks on forestry activities. However, limited time has been spent conducting checks. We are currently working on plans to use Plateau herbicide, prescribed burning and other treatments to prevent invasive or other weeds from getting into the seed production fields.

The effects of thinning and prescribed burning on eroded areas are being studied in Chester County on the Enoree , and another study has been planned in Abbeville County on the Long Cane that will address more intensive harvesting, prescribed burning, creating wildlife openings and understory thinning practices. These are being undertaken to ensure activities do not damage soils or adversely affect soil improvement activities or productivity. Some expansion in the new study may also address some water yield, erosion and sedimentation issues. A preliminary report is available on the initial effects associated with the multi-year study in cooperation with the Southern Research Station.

The extended drought conditions experienced in much of South Carolina from 1998-2002 have affected some of the past soil and water treatment areas causing mortality to some grass covers and stress to trees and other vegetation. The effects on soil and water of reopening temporary roads, old travel ways and skid trails to suppress beetles have not been monitored to any great extent, but their effects have produced little or no notice. Temporary erosion control measures were implemented following timber salvage operations.

Establishing Native Plants
Enoree Ranger District

Determine if the desired water quality and quantity objectives are being achieved.

Overall, water quality objectives (that we have some direct control over) are being achieved by implementing Best Management Practices and management measures. They are designed, implemented, and adjusted to address water quality, riparian, stream, and watershed conditions. Avoidance and minimization are often used to limit or prevent effects to water and associated resources. Mitigation measures are designed and applied to reduce the magnitude and duration of effects. Active erosion and sedimentation problems are addressed through inventories and a very active soil and water improvement program. Projects have been implemented to stabilize, restore and improve soil and water conditions to meet the Clean Water Act objectives. There remain activities that need continued attention such as OHV and horse trails, firelines, cultivated wildlife openings, and treatment of open non-system roads. This is done through evaluation of design, project implementation, maintenance, and/or monitoring practices.

There is an increasing need to share technology and to help others address water quality issues that impact National Forest streams. Most of the watersheds, identified by the state in the Unified Watershed Assessment as priority watersheds for treatment in South Carolina, do not include National Forest lands. Where possible, the Forest Service cooperates with other state and federal water quality programs. However, whether identified on state or other priority lists, most watersheds contain areas needing repair of some soil and water problems. We are interested in participating with private landowners but have limited technical and funding resources available to provide assistance. Currently, most water quality problems on private lands are referred to USDA Natural Resources Conservation Service or other federal, state and private programs. Monitoring of water quality on the Chattooga River will be addressed in the *Revised Land and Resource Management Plan.* Primary water quality issues are fecal coliform and sediment. To date, funds have not been available to monitor this.

Ensure compliance with state water quality requirements and monitor the effects and adequacy of Best Management Practices.

State BMP are implemented as part of project planning and contractual requirements. For some of our activities, specific BMP have not been completely designed or approved, though we are working toward that end. Monitoring effects and adequacy of BMP continue to rely heavily on field inspections and observations. Although not completely implemented in FY 2003, the agreement with the South Carolina Forestry Commission to conduct compliance checks is available for immediate use when appropriate to help us obtain an outside look at our implementation and effectiveness. Spot checks of BMP implementation are made and functional assistance trips used to address activities and issues. Updated training in soil and water resource areas is needed to keep personnel informed of changes and maintain awareness of when they should be contacting or consulting with the soil and water specialists.

Perhaps one of the most chronic landscape problems in the piedmont of South Carolina has been the effect of past farming activities. Although many of these areas have been treated, active gullies and gall areas continue to disrupt natural hydrologic processes on localized areas of the National Forest, delivering high unit area loads of sediment to streams. These areas also damage site potential by removing topsoil, organic material, and water so that plant cover is often limited or nonexistent without recovery efforts. Active gully areas also contribute to downstream flooding, fill aquatic habitats with sediment and limit water infiltration and groundwater recharge. The erosion, sedimentation, site damage and downstream effects associated with gully formation are contrary to our goals

to maintain or improve water quality and site conditions. Soil and water improvement work, gully stabilization and restoration, continues to be an important program. Technology sharing with other agencies and resource professionals is also provided when possible.

Determine the effects of management actions on soil quality and site productivity.

Activities that impact or potentially impair site productivity and soil conditions were identified and evaluated in the Forest Plan or in environmental analysis. The Regional Office provided guidance that suggested how much soil erosion could occur and maintain site productivity. Activities are adjusted to keep them within the tolerance factors for soil productivity loss. Ways to avoid and mitigate erosion and productivity effects are evaluated before decisions are made. Efforts to establish and to improve site conditions with native grasses are actively under way. Native grasses offer some potential to increase site productivity, while allowing increased prescribed burning and thinning activities needed to achieve forest health and other resource goals. Improvements expected include increased sunlight to the forest floor and healthy herbaceous and grass ground cover with increased root density and organic matter in the surface soils. Although native plants are somewhat more expensive to establish, they handle nutrient, moisture, insect, disease, and burning stresses. They also help promote healthy and resilient forest conditions, with limited maintenance costs.

A Regional Office field assistance trip included a review of prescribed burning activities and their potential effects on a wide variety of soil types. We found a few, very small areas that were impacted by burning. All firelines surveyed were located on adequate grades and water barred properly to prevent excessive erosion and sedimentation.

Activities during FY 2003 that had some productivity effects to localized areas include relocating selected sections of off-highway vehicle (OHV) and horse trails, temporary roads and firelines. Problem areas were identified, and the effects of these activities were minimized and mitigated for temporary use roads and firelines. Continued improvement is expected in OHV (including All Terrain Vehicles – ATV) and horse trails because more experience and resources are being put toward proper installation, maintenance and relocation. Improvements that we have identified include avoiding steep and flat gradients, using measures to compact fill or reworked materials, monitoring the effects of activities in wet weather, applying seasonal closures when necessary, marking trail locations clearly and diverting water from the trail surface frequently to avoid the concentration of flow and associated erosion. Many of the past problems with the Enoree OHV Trail have been addressed. Culverts were installed at many of the stream crossings and parts of the trail relocated away from wet areas. In some locations, armoring the surface of the trail by embedding aggregate or rock materials has been successful.

Ongoing adjustments to prescribed fire activities on sensitive or erosion hazard soil areas continue. However, preliminary results from the research-based study of thinning and prescribed burning on severely eroded areas within Chester County suggest that prescribed burning of these areas can proceed with careful attention to implementing low severity burns. Several prescribed burns within Chester County were evaluated and found to be in BMP compliance. Another research-based study is under consideration that will evaluate the effects of frequent and high intensity fire, mechanical understory treatments and site conversion for habitat needs on the moderate to high site soil areas within the piedmont in Edgefield County on the Long Cane. Both projects are collaborative work with the Southern Research Station through Charleston, SC.

Some severely rutted sections of OHV and horse trails have been relocated. Closing or decommissioning some problem roads, trails

and dispersed recreational (within riparian areas) sites have been accomplished using closure on demand which measures a combination of rainfall and rutting to determine when OHV trail closure should occur. In 2003, the Enoree's Buncombe Horse trail was identified to be in poor shape.

Determine the effects of management actions on riparian values, soil and water quality and stream bank stability.

Management actions are analyzed under the National Environmental Policy Act (NEPA) and other requirements and directives. Areas of analysis include the potential effects of activities on riparian, soil, water, and stream resources. In most cases, implementing existing Forest Plan Standards and Guidelines (S&G) will limit effects on the critical resource areas. Continued evaluations of road and trail construction and maintenance, timber harvest, thinning, wildlife openings, firelines and landscape burning activities are under way. These evaluations are often in the planning stages before activities are implemented and include avoidance, minimization and mitigation measures when appropriate, including implementation of Best Management Practices.

In other cases, effects identified with specific practices or actions have become the focus of pointed assessment and training within a management activity. Measures are being implemented to improve conditions. In 1998, the Forest Service identified that some roads, OHV trails, and firelines were problem areas. Since then, the forest has aggressively inventoried and treated many of these areas. Some of the work involved partnerships and interagency cooperation. Some aggressive and quality law enforcement has helped highlight problems with some violators. Other measures to decrease environmental damage included: seasonal OHV trail closure, training, improved frequency and design of maintenance measures, and signing. Some problem areas continue to need reconstruction or relocation in an increasing working interaction with users. In addition, use of cooperators and contracts has increased our ability to respond to workload and timing of treatments.

Most of the soil and water improvements accomplished on the Enoree District over the last several decades were reviewed in FY2002 as a result of the continuing drought in South Carolina. Some localized areas of past treatments have failed. We revisited most of 100 past treatment sites and any repairs made in FY 2000 and annually for problem areas to identify and address any additional problem areas. Some localized maintenance treatments were recommended. In FY 2003, SC had numerous storm events and higher than normal rainfall. We continued to check and repair conditions that were affected in the past. Most of the past treatments reviewed were under 30 years old and have been very effective at reducing erosion, sedimentation, and gully expansion. Treatments also provide a high quality range of habitats from early successional grassed areas often found on recent treatments, to dense, intermediate habitats of loblolly pine commonly found on stands about 15 years or older. Some of the more recent areas had planted hardwoods and native grasses. Indicators such as chlorotic needles, lichens, excessive branching and poor tree form suggest refertilization may be needed on some areas. However, we have begun to review the results of those areas fertilized in FY 2000. There should be some change in the nutrient content and indicators that may suggest the effectiveness of the treatment under these circumstances. The areas requiring maintenance treatments to protect investment continued to be given priority. Native plants from the local area were used in the recovery efforts where possible. Many of the areas treated more than 15 years ago have dense pine stands with heavy needle cast on the soils. On the gentler portions of these areas, some thinning and/or careful prescribed burning would help increase component of native grasses and micro-sites for hardwood

introduction. Research suggests that besides increasing biodiversity, native grasses increase soil organic content and the rate of soil recovery. We are trying to verify this with some of the prescribed fire and thinning research under way on the forest.

We monitored several low site stands that were fertilized to improve soil productivity. Several trees were bored and tree rings indicated that the trees were using the fertilizer in the years after the fertilization. Also noted was an increase in ground cover for the fertilized areas. The understory vegetation had improved density; the leaves and needles showed quality growth characteristics and dark green-to-green color .

Issue 2 – Sustainable Multiple Forest and Range Benefits

Sub Issue 2.1 – Outdoor Recreation Opportunities

Determine if the desired recreational uses, opportunities, and aesthetic values are being achieved.

Recreational management activities in FY 2003 helped move the Sumter toward the desired conditions set forth in the Forest Plan. The following is a list of examples.

In an effort to address a primary concern of National Forest visitors, improved signing continued to be an emphasis at developed recreation sites and trails across the Forest. Additionally, Forest Service presence was increased and services enhanced during high use periods (weekends and holidays) by rearranging staff work schedules and augmenting with some Fee Demo funds. Increased services included more frequent cleaning, public contacts, and information dissemination.

Old toilet facilities were replaced with new sweet-smelling toilets (SST) at two high-use sites along the Chattooga National Wild and Scenic River, and one at the popular Yellow Branch Picnic Area and Trailhead. Additionally, designs were completed for three new SST to replace portable toilets at the three busy OHV trail heads in the piedmont. The new accessible fishing pier at Johns Creek Lake replaced the one that burned down a couple years ago.

Driven by feedback from whitewater boaters on the Chattooga, and as part of the Sumter Plan Revision, the forest analyzed alternatives for opening the headwaters of the Chattooga River (above Highway 28) to whitewater boating. Also, the Comprehensive River Management Plan for the Chattooga was reviewed and coordinated with other national forests in North Carolina and Georgia.

In an effort to provide high levels of dispersed recreational opportunities and to meet public demand for trails, several projects were initiated in FY 2003:

- The Andrew Pickens, in partnership with South Carolina State Parks, Palmetto Conservation Foundation, and the National Forest Foundation, designed and laid out a hiking/mountain bicycling trail in the Upstate of South Carolina. The facility will connect two State Parks across National Forest ownership and is scheduled for implementation in FY 2004.

- Similarly, the Long Cane, in partnership with the Southern Off-Road Bicycling Association and the International Mountain Bike Association, designed and laid out a 30+ mile system of mountain bicycle/hiking trails. A grant to implement this project was prepared and applied for in early FY 2004; with a planned implementation date of late FY 2004 – early FY05.

- On the Enoree, survey, design, and contract packaging were completed for several major projects on the Sumter Passage of the cross-state Palmetto Trail.

These projects include constructing a 120-foot span trail bridge over the Enoree River, constructing two smaller bridges, and boardwalks. All projects are slated for implementation in FY 2004 through a combination of grant and appropriated dollars.

- Finally, the Enoree worked with an OHV Trail expert from the Region 5 Enterprise Program to redesign the Enoree OHV Trail for improved financial and environmental sustainability, as well as increased customer satisfaction. The former goal will be accomplished by relocating sections of the existing trail onto better alignments, hardening the trail tread where needed, and installing water drainage structures. Increased customer satisfaction will be achieved by developing additional miles of more difficult trail, thereby increasing the quality and quantity of the experience. A $300,000 grant to implement this project was awarded in FY 2003. Planned implementation is late FY 2004.

The forest continued to offer high customer satisfaction. Annual maintenance activities for the three motorized trails in the piedmont were accomplished through a combination of contracts and force account work (i.e. work done by the forest service). These efforts were powered by motorized trail fees, Recreation Trails Program grants, and appropriated dollars, along with volunteer hours contributed by the South Carolina Off-Road Enthusiasts.

The motorized trails on the Sumter are in the best shape they have ever been in despite an abnormally wet year. Reasons include increased use of the forests' SWECO trail tractor and successfully implementing wet weather closures.

The forest has also maintained equestrian trails with the SWECO trail tractor, and by looking for opportunities to improve trails alignment for increased financial and environmental sustainability.

For example, a combination of trail relocation and reconstruction work improved sections of the Rocky Gap Horse Trail on the Andrew Pickens Ranger District. The end products include increased customer satisfaction, reduced operation and maintenance costs, and mitigated resource impacts to the Chattooga Wild and Scenic River.

Additionally, the Long Cane Horse Trail was analyzed for financial and environmental sustainability. Pertinent sections of the trail were redesigned onto more suitable alignments. A $100,000 grant proposal was awarded in FY 2003, with implementation scheduled for FY 2004.

Additional observations:

- Scenery management reviews indicate that Forest Plan visual quality objectives are being met.

- Motorized trails continue to be the highest use trails on the piedmont units.

- Requests continue for more and better trail maps, information and signing.

Sub-Issue 2.2 – Infrastructure

Ensure that any roads constructed are designed according to standards appropriate to the planned uses.

Roads were constructed and reconstructed to carry the intended traffic volumes safely and efficiently. Using the Forest Service road construction, maintenance, and reconstruction standards, current Best Management Practices, and technical assistance from other resource experts, road designs emphasized mitigating negative impacts to resources with the focus on watershed health. Emphasis was placed on road reconstruction, maintenance and decommissioning. Road projects for timber

activities were mainly resurfacing and culvert replacement. No new miles of road were constructed in FY 2003.

In FY 2003, the Sumter National Forest continued to survey road conditions to determine both the condition of the road system and the amount of deferred road maintenance. The updated survey identified $21,062,916 dollars of maintenance needed on the 1,053.1 miles of road on the Sumter National Forest. The completion of all road condition surveys is scheduled for the end of FY 2006 and will give a complete picture of the road maintenance backlog.

Road mileage will continue to be adjusted as a result of the road condition survey efforts and road decommissioning. The forest may see a slight increase in mileage due to land acquisition and the newly acquired roads on these lands.

Table 2-11. Status of Roads on the Sumter National Forest in FY 2003

FY 2003 Road Status	Miles
Roads Constructed	0.0
Roads Reconstructed	7.5
Timber Roads	8.2
Roads Decommissioned	6.0
Total Open Roads	650.6
Total Closed Roads	402.5

Sub-Issue 2.3 – Human Influences

An additional 720 acres were acquired on the Sumter National Forest.

A Summary Judgment dismissed the lawsuit on the Candy Branch Gold Mine

Sub Issue 2.4 – Roadless Areas/Wilderness/ Wild and Scenic River

Roadless Areas

Four roadless areas on the Andrew Pickens District are being maintained to retain their roadless character.

Wilderness Areas

The only wilderness on the Sumter National Forest is Ellicott Rock. This wilderness area lies in South Carolina, Georgia and North Carolina, and is one of the oldest in the eastern US. There are several miles of trails within this wilderness. Use levels along two trails in the southwestern part of Ellicott Rock Wilderness near and adjacent to the Chattooga Wild and Scenic River continue to be higher than desired; solitude is sometimes compromised.

Based on the National Visitor Use Monitoring, completed in 2002, wilderness use on both the Sumter National Forest and Francis Marion National Forest was 52,864 visits annually. (Due to sampling method it is not possible to isolate the use for just Ellicott Rock. However, because of the wet conditions of the wilderness on the Francis Marion most of this use estimate is in Ellicott Rock Wilderness.)

Overall, direction for wilderness is being followed, and management activities are maintaining wilderness values in all wildernesses.

Wild and Scenic Rivers

The Chattooga River is the only designated Wild and Scenic River on the Forest. Overall, direction for the Chattooga Wild and Scenic River is being followed and management activities are maintaining the free-flow, water quality and outstandingly remarkable values of the river. (For additional information on water-quality on the Chattooga River see the water section of this document.)

There are 8 other rivers that are eligible for wild and scenic status based on an assessment of outstandingly remarkable values. The

Revised Forest Plan protects the outstandingly remarkable values, free flow and water quality of these rivers.

Sub-Issue 2.5 – Timber

Determine if timber resource sale schedule is within the Forest Plan's Allowable Sale Quantity (ASQ).

Timber harvest has been well under the allowable amount established in the Forest Plan. In FY 2003, 2.5 million cubic feet (MMCF) of an allowable sale quantity of 18.2 MMCF per year were offered for sale.

Determine if silvicultural practices are in compliance with the Forest Plans.

In FY 2003, timber was harvested using thinning, seed tree cut, shelterwood cut, seed tree removal cut, and salvage harvest methods. Site preparation for natural regeneration, site preparation for planting, planting, and release work were accomplished during the year. All of the above silvicultural practices were in compliance with the Forest Plan.

Determine if harvested lands are adequately restocked within 5 years.

Lands harvested for regeneration are stocked within 5 years. Survival and stocking checks are made after the first and third year of either planting or site preparation for natural regeneration. Further work is done if areas show a need.

Determine if maximum harvest unit size limits are being met and should be continued.

Size limits apply only to regeneration harvest units. In FY 2003, average regeneration unit size was 36 acres on the Sumter, with a range from 20 to 73 acres. No regeneration harvest was offered for sale the previous fiscal year, due to southern pine beetle outbreak. The National Forest Management Act limits regeneration unit size to 80 acres for southern yellow pine types and 40 acres for other forest types. Regional Forester approval is required for larger regeneration units.

Ensure that no timber harvesting occurs on lands classified as not suited for timber production, except for salvage sales or sales necessary to protect other multiple-use values where the Forest Plan establishes that such actions are appropriate.

One salvage sale continued in the Calhoun Experimental Forest during FY 2003. A check of records revealed no other timber harvest on lands classified as unsuitable for timber production.

Determine if lands identified as not suitable for timber production have become suitable.

The *Proposed Revised Land and Resource Management Plan* for the Sumter National Forest evaluated suitability for timber production. Outside of the Forest Plan revision, no lands identified as unsuitable for timber production are suitable in FY 2003.

Sub-Issue 2.6 – Forage

Determine if the desired forage production objectives are being achieved.

There are no grazing areas on the Sumter.

Sub-Issue 2.7 – Other Products
Identify other products typically requested and status in relation to Forest Plan expectations.

No expectations of other forest products.

Sub-Issue 2.8 – Heritage Resources

Ensure the protection of significant cultural resources from degradation and destruction

Heritage resources are vulnerable, nonrenewable resources and our goal is to preserve, protect, and interpret them for the public. To this end the Forest Service conducts heritage resource inventories to identify cultural resources before undertaking any activities that might affect these resources. A preliminary evaluation of these resources is conducted to determine if they are eligible for listing in the *National Register of Historic Places*. However, due to limited funds we are not able to conduct complete evaluations and many of the sites are placed in an unevaluated category until a more thorough review can be made. Both eligible and unevaluated archaeological sites, buildings, and structures are protected in place during any project or activity that might adversely affect them.

The forest's fiscal year program of work included inventory of 3,279 acres and more than 22 miles of national forest system lands in support of various projects and land management activities. This inventory resulted in recording 40 new archaeological sites. Of these 40 sites 8 were determined to be eligible for listing in the *National Register of Historic Places* or possibly eligible but unevaluated.

A total of 72 projects were reviewed for heritage resources in FY 2003. This included a 2,037-acre survey in the Indian Creek Analysis Area on the Enoree Ranger District. Archeological Resources Protection Act permits were issued to non-agency archeologists to conduct cultural resource investigations before construction of the Oconee Connector Trail on the Andrew Pickens Ranger District, for a survey of 2.9 miles of power line right-of-way for Haywood Electric Membership Cooperative on the Andrew Pickens Ranger District, and for a data recovery project at site 38CS112 on the Enoree Ranger District.

The Forest Service monitors archaeological sites and historic buildings to determine if current administrative and field procedures were sufficient to protect significant cultural resources from damage or destruction by either human or natural forces. A total of 40 sites were revisited and checked for vandalism or other damage during fiscal year 2003.

The results of this effort are presented in Table 2-12.

Table 2-12. Heritage Monitoring Results	
Total number of sites monitored	40
Sites monitored within project area	0
Sites effected by project	0
Sites vandalized	1
Sites eroding by water	2
Sites damaged by forest users	1
Sites damaged by tree fall	0
Sites undisturbed	36

The full scope of archaeological site looting, vandalism, and other threats is not known because of the small sample of sites monitored. Additional information on site damaged is passed along from other forest users, employees, and partners. Water erosion continues to damage sites bordering Lake Strom Thurmond on the Long Cane District. Vandals and looters searching for artifacts damaged several sites along the lake shoreline.

A number of archaeological sites are being damaged by unauthorized use of woods roads or jeep trails. Unauthorized OHV, bicycle, and horseback riding are also causing erosion and damage on some sites. It appears that the use of metal detectors to locate and dig for metal artifacts on historic sites is increasing. Continued

plowing of firelines and wildlife fields may damage archaeological sites. Artifacts on plowed sites are brought to the surface and exposed for illegal collecting.

Heritage resources include buildings and structures as well as archaeological sites. There are eight fire look out towers that need repair, restoration, or documentation

Forest Response to Sites at Risk

The forest continues to identify and monitor archaeological sites and historic buildings and structures at risk. Heritage resource specialists are working with law enforcement, other Forest Service employees, and the public to document and deter unauthorized forest activities that damage historic properties. Forest Service projects may be redesigned to avoid impacts to archaeological sites. Partnerships are developed with local interest groups to assist in meeting obligations to protect heritage resources.

The forest is systematically surveying all Wildlife Openings and firelines to determine impacts on heritage sites.

Public Participation

The forest promotes heritage values including a sense of public stewardship and greater understanding of the nature and benefits of heritage resources through public education, outreach, and interpretation. Heritage resource specialists conduct interpretive talks, make public presentations, and conduct school programs concerning the history and prehistory of the forest.

Interested local historic groups and families seek help from the Forest Service about preserving and protecting cemeteries. Forest heritage staff met with several individuals interested in cemeteries located on the Sumter National Forest and provided information on local and family history.

Partnerships

The Forest Service works cooperatively with the South Carolina Institute of Archaeology and Anthropology (SCIAA) and the South Carolina State Historic Preservation Office (SHPO) to document and record heritage resources. The Forest Service has an agreement with the Office of the State Archaeologist to store and maintain all artifact collections made on national forest lands.

Summary of Research Findings and Needs

The forest is working to refine and test the predictive models of archaeological site location. A survey of firelines on the forest resulted in a refinement of the current model that will be tested during future surveys. The forest plans to complete the ***Sumter National Forest Cultural Resources Overview*** in Fiscal Year 2004/2005 providing a framework for future heritage resources management.

The forest needs to continue monitoring to determine the effects of unauthorized activities and uses on archaeological sites. The evaluation of the effects of management activities such as tilling wildlife fields and constructing firelines should also be continued.

In past years, the forest has had a very successful research program through challenge cost share in cooperation with a number of universities and state agencies. However, given the decreasing heritage resources funding there has been a significant decrease in partnership opportunities. The forest should seek other funding opportunities to increase this important program.

Issue 3. Organizational Effectiveness

Sub-Issue 3.1 - Economics

1. Economics

There is a need to document cost associated with carrying out the planned management prescriptions, as compared with the costs estimated in the Forest Plan. Evaluate radical deviations between planned and budged costs.

The budget allocation and expenditure tracking on the Francis Marion and Sumter National Forests do not allow the expenditures to be tracked separately for each forest, so they must be considered together. See Table 2-13.

Table 2-13. Actual and Inflated Expenditures[1] for the Francis Marion and Sumter National Forests from 1997 to 2003 (adjusted for inflation)

Year	Actual Expenditures	Inflation Factor	2003 Value
1999	$12,411,344	1.10	$13,652,478
2000	$12,365,747	1.07	$13,231,349
2001	$11,720,065	1.04	$12,188,868
2002	$11,399,929	1.02	$11,627,928
2003	$11,451,882	1.00	$11,451,882

[1]Expenditures do not include any dollars allocated for grants or for specific programs (such as recreation fee demo, rural development, or Senior Community Service Employment Program).

Sub-Issue 3.2 – Evaluating New Information

Identify emerging issues, concerns and opportunities that need to be addressed

Efforts are underway to develop a strategy for implementing the Healthy Forests Restoration Act recently passed by Congress on January 7, 2003.

The forest is in the process of responding to five appeals on the new Sumter Forest Plan. Issues range from wanting the Chattooga River open to boating above Highway 28 to disagreeing with our timber suitability and environmental effects analysis.

Determine when changes in Forest and Rangeland Renewable Resource Planning Act (RPA), policies, or other direction would have significant effects on Forest Plans.

No changes are expected at this time.

Determine if conditions or demands in the area covered by the Forest Plan have changed significantly.

There have been no significant changes to resources during this time period based on yearly and 5-year monitoring results.

Evaluate the effects of National Forest management on land, resources, and communities adjacent to or near the National Forest; and the effects upon National Forest Management of activities on nearby lands managed by other federal, state, or local government agencies.

The Secure Rural Schools and Community Self-determination Act of 2000 (PL 106-393) provided counties with the option of continuing to receive payments under the 25 per cent fund or electing to receive their share of the average of the three highest 25 per cent payments during the period of 1986 through 1999, called the full payment option. Twenty-five per cent payments were based on timber receipts.

In recent years, the number of timber sales on National Forest land has declined, reducing the amount of revenues received by the Forest Service and raising concerns by local communities regarding the effect this may have on their businesses and communities.

In 2000, Congress passed legislation to make up for the reduction in timber sales. The Secure Rural Schools and Community Self-Determination Act gave local communities a choice. All 13 affected counties chose to receive the full payment option. The 11 counties on the Sumter National Forest and the payments are displayed in Table 2-14.

Table 2-14 Returns to Counties

County	FY2003 Full Payment
Abbeville	144,773.34
Chester	77,295.11
Edgefield	193,341.12
Fairfield	69,131.59
Greenwood	66,754.86
Laurens	130,719.67
McCormick	306,390.40
Newberry	353,304.82
Oconee	499,008.20
Saluda	27,280.62
Union	374,075.30

Chapter 3. FY 2004 and 2005 Action Plan and Status

Actions Not Requiring Forest Plan Amendment or Revision

a) Action: Add Brown-headed nuthatch monitoring points on the Andrew Pickens and Enoree Districts in open, late successional pine habitat**.**

Responsibility: District and forest biologists

Date: FY 2004

Status: Need to add new points on the Enoree and Andrew Pickens districts.

b) Action: Increase abundance of open, fire-maintained habitat on the Andrew Pickens and the Enoree Districts.

Responsibility: District and forest biologists

Date: FY 2004

Status: Some work has been done on the Andrew Pickens District, but none has been done on the Enoree District.

c) Action: Incorporate the monitoring elements and task sheets from the Revised Forest Plan.

Responsibility: Districts and SO.

Date: FY 2004 and FY 2005

Status: The Record of Decision was signed in January 2004 with plan implementation beginning on March 1, 2004. FY 2004 monitoring priorities have been determined. FY 2005 monitoring priorities will be established through a Resource Advisory Team (RAT) process to be held in June or July of 2004. The format for the FY 2004 monitoring report will be revised by November of FY 2005.

d) Action: Incorporate the updated Management Indicator Species from the new Sumter Forest Plan and update the MIS document prepared in 2001 entitled *Management Indicator Species Population and Habitat Trends.*

Responsibility: Districts and SO.

Date: FY 2004 and FY 2005

Status: The Record of Decision was signed in January 2004 with 13 MIS species defined.

e) Action: Inventory and then develop a monitoring program for aquatic macroinvertebrate communities across the Sumter National Forest, including aquatic insects, crayfish and mollusk.

Responsibility: Districts and SO.

Date: FY 2004 and FY 2005

Status: Crayfish have been collected for identification purposes from a limited number of streams on the Enoree and Long Cane Ranger Districts. Mussel surveys have been conducted on a limited number of streams on the Andrew Pickens and Long Cane Ranger Districts.

Actions That Require Forest Plan Amendment or Revision

No actions are needed that would require a Forest Plan Amendment. Appendix A - List of Preparers

Appendixes

A. List of Preparers

The following individuals contributed to this report:	
Jim Bates	Forest Archaeologist
John Cleeves	Forest Planner
Robbin Cooper	Landscape Architect
Bill Hansen	Forest Hydrologist
Ed Hedgecock	Forest Engineer
Bill Jackson	Air Resource Specialist
Charlie Kerr	Fire/Aviation Management Officer
Dennis Law	Forest Soil Scientist
Robert Morgan	Forest Archaeologist
Gary Peters	Forest Wildlife Program Manager
Jay Purnell	Forest Silviculturist
Jeanne Riley	Fisheries Program Manager
Joe Robles	Recreation Specialist
Robin Roecker	Forest Ecologist/Botanist
Eric Schmeckpeper	GIS Specialist
Oscar Stewart	Resource Staff Officer
Gail White	Public Affairs Specialist
Tony White	Planning, Engineering, Recreation, and Heritage Resources Staff Officer

B. Amendments to Forest Plan

Amendment 1 (March, 1986)

This amendment outlines, 1) standards and guidelines for planted seedling spacing to benefit wildlife, restrictions for aerial application of herbicides, increased mast production and diversity for wildlife, consultation with SCDNR biologist when regeneration stands are less than 50 years of age, and road density to conform to the R8 Wildlife Management Handbook; 2) emphasis on the management strategies are for a 10-15 year period; and 3) changes in seasonal floater use on the Chattooga River.

Amendment 2 (April, 1987)

This amendment incorporates the Record of Decision for the Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle in the Southern Region.

Amendment 3 (May, 1987)

This amendment corrects inconsistencies, conflicts and errors that have surfaced as implementation of the Forest Plan proceeds. The other primary charge is to remove the 6,021-acres Talatha Tract adjacent to the Savannah River plant that has been transferred to the Department of Energy.

Amendment 4 (January, 1989)

This amendment incorporates the methods and tools available for use in the Final Environmental Impact Statement (EIS) on vegetation management in the Coastal Plain/ Piedmont. Biological tools are not allowed. All tools specified for prescribed fire, herbicide and manual methods are available for use. For mechanical methods, all tools are available except raking and heavy disking.

Amendment 5 (June 1989)

A summary of changes follows: 1) add management of the fisheries resource to the forest management goals; 2) add Highway 107 on the Andrew Pickens District to the Scenic Byway system; and 3) reduce the size of the Calhoun Experimental Forest by 5,527 acres. These acres were determined to be in excess to the needs of forest research.

Amendment 6 (July, 1989)

This amendment incorporates the methods and tools available for use in the Final EIS on vegetation management for the Appalachian Mountains. All tools specified for prescribed fire, herbicide, biological and manual methods are available for use. For mechanical methods, all tools are available except raking and heavy disking.

Amendment 7 (February, 1990)

Amend the Sumter Plan on page M-12 to read,"Permit an orienteering competition on March 21, 1990, due to its international significance to enhance cooperation between peoples of the world."

Amendment 8 (April, 1990)

This amendment adds the Interim Standards and Guidelines for the Protection and management of RCW habitat within ¾ mile of colony sites as described in the Decision Notice of April 1990, as supplemented direction to the RCW protection and Management Standards and Guidelines of this plan.

Amendment 9 (August, 1992)

This amendment updates the decision on management systems and cutting methods to be used to manage the timber resources on the SNF and permits the regeneration and management of mixed pine/hardwood timber stands.

Amendment 10 (withdrawn April, 1994)

This amendment provides a standard and guideline for additional protection of streamside zones and riparian areas.

Amendment 11 (October, 1994)

This amendment changes the allocations for commercial rafting use described in the amended Sumter Plan.

Amendment 12 (August, 1998)

This amendment reallocates 20 acres on the Enoree District from Management Area 12 to Management Area 9.

Amendment 13 (November, 2001)

This amendment reallocates 509 acres from Management Areas 12, 13 and 17 to Management Area 14 to allow construction of the Palmetto Trail.

Amendment 14 (August, 2002)

This amendment changes guided and self-guided recreational boating on the Chattooga Wild and Scenic River.

Amendment 15 (October, 2002)

This amendment provides direction for the preparation of site-specific Biological Evaluations (BEs) including inventory requirements for Proposed, Endangered, Threatened, and Sensitive (PETS) species on the two Piedmont – Enoree and Long Cane Ranger Districts. The amendment makes the process of conducting BEs more efficient and consistent throughout the Southern Region of the Forest Service.

Amendment 16 (October, 2002)

This amendment provides direction for the preparation of site-specific Biological Evaluations (BEs) including inventory requirements for Proposed, Endangered, Threatened, and Sensitive (PETS) species on the Andrew Pickens District. The amendment makes the process of conducting BEs more efficient and consistent throughout the Southern Region of the Forest Service.

C. Summary of Research Findings and Research Needs

What species of crayfish occur on the forest and what is the distribution of crayfish across the forest? What is the population status?

What species of mollusks occur on the Forest and what is the distribution of mollusks across the forest? What is the population status?

What type of management is needed to maintain or restore habitat for small whorled pogonia on the forest?

How can viable populations of Oglethorpe Oak be maintained and managed on the forest?

Sumter National Forest
Fiscal Year 2003
Monitoring and Evaluation Report

Comment Form

If you have any comments on this report, please fill out this form and mail it to

USDA Forest Service
4931 Broad River Road
Columbia, Sout Carolina 29212

Please include your name and address at the bottom of this form.

I have the following comments on the fiscal year 2003 Monitoring and Evaluation Annual Report:

_____
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Name: _____
Address: _____
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