

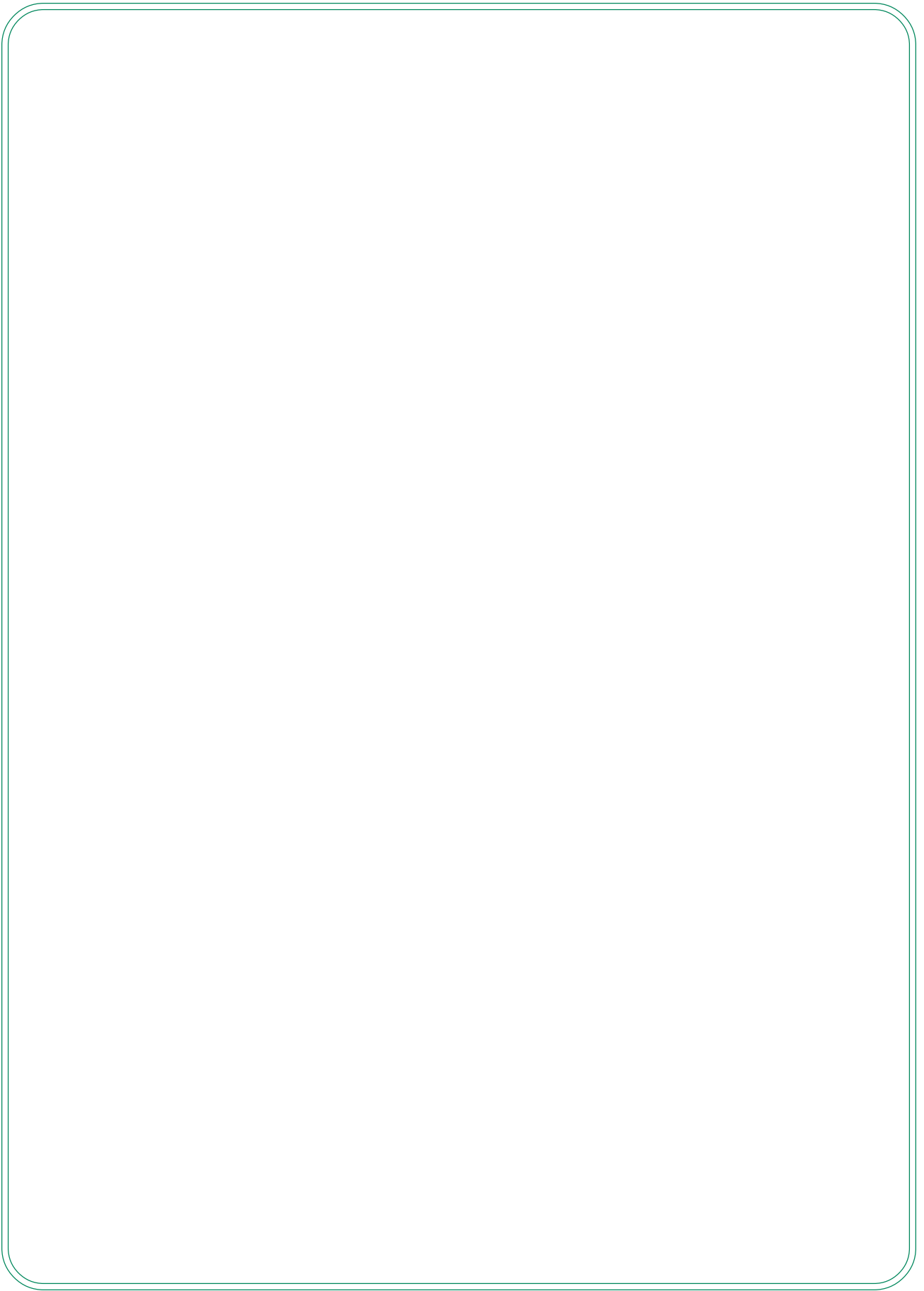
Sumter National Forest

Monitoring and Evaluation

Annual Report

Fiscal Year 2002







Sumter National Forest

Fiscal Year 2002 Monitoring and Evaluation Report

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The cover photographs were taken on the Sumter National Forest and represent each of the three Ranger Districts that comprise the Sumter: Andrew Pickens, Enoree, and Long Cane.

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Jeanne Riley, Fisheries Biologist, monitoring trout populations on the Andrew Pickens Ranger District.

Acronyms

The following is a list of commonly used acronyms found throughout this document.

AP	Andrew Pickens Ranger District
ASQ	Allowable Sale Quantity
BCD	Biological Conservation Database
BMPs	Best Management Practices
BVET	Basin-wide Visual Estimation
DBH	Diameter at breast height
EN	Enoree Ranger District
EPA	Environmental Protection Agency
FS	Forest Service
FY	Fiscal Year
GIS	Geographic Information System
IM	Inventory and Monitoring
LC	Long Cane Ranger District
MIS	Management Indicator Species
MMCF	Million cubic feet
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NRCS	Natural Resource Conservation Service
NVUM	National Visitor Use Monitoring
OHV	Off-highway Vehicles
PETS	Proposed, Endangered, Threatened, and Sensitive Species
PIT	Passports in Time
PPM	Parts per million
PSD	Prevention of Significant Deterioration
RPA	Resource Planning Act
SAMI	Southern Appalachian Mountains Initiative
SCDHEC	South Carolina Department of Health & Environmental Control
SCDNR	South Carolina Department of Natural Resources
SO	Supervisor's Office
SPB	Southern Pine Beetle
T & E	Threatened and Endangered Species
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 Forest Plan is sufficient to guide management activities unless ongoing monitoring and evaluation identify further need for change.

Any amendments or revisions to the Forest Plan will be made using the appropriate National Environmental Policy Act procedures.

/s/ Jerome Thomas

9/10/03

JEROME THOMAS
Forest Supervisor

Date



The Sumter National Forest in Autumn

Executive Summary of Monitoring and Evaluation Results and Report Findings

The *Sumter National Forest Land and Resource Management Plan* (Forest Plan) provides guidance on how the Sumter National Forest (SNF) 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 Forest Plan for the Sumter National Forest is currently being revised and a Record of Decision is planned for December 2003.

Summary of Key Findings:

Ecosystem Condition, Health and Sustainability

Normal sale preparation and harvest offerings were at very low levels in FY02 so that the Sumter National Forest could focus on salvage sales and southern pine beetle (SPB) suppression activities. In the piedmont, 1,315 acres of salvage were sold in FY02. Some vegetation management activities were also put on hold to make funds available for western fire suppression expenses. No acres were regenerated in FY02.

Regeneration was delayed on 284 acres due to the freeze on expenditures to pay for fire suppression expenses in 2002. The Sumter National Forest offered 6 acres of thinning harvest for sale in FY02. The Forest Plan estimated that an average of 2,817 acres would be thinned annually.

An objective of the Forest Plan is to have about 46,200 acres or 14.5 percent of the Sumter suitable acres in the 0-10 year age class. Approximately 17,294 acres or 5.4 percent met the criteria in FY02. Only about 2 percent will be in

this age class by 2005, unless regeneration trends change. Reduced staffing and environmental challenges have reduced the amount of regeneration harvest on the Sumter.

An objective of the Forest Plan is to have at least 5 percent 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, 26,605 acres or 10.5 percent of the pine forest type met the criteria in FY02.

Southern pine beetle populations were at outbreak levels across the Sumter in FY02. This concern is being addressed through cutting and removing (salvage harvest) or by cutting and leaving infested trees. These actions have proven to be effective in disrupting and reducing beetle spread to healthy green trees.



Southern Pine Beetle, not to scale

Hemlock woolly adelgid (*Adelges tsugae*) was identified during 2002 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 Sumter prescribed burned 21,532 acres in FY02 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.

Surveying, inventorying, establishing plots, and monitoring were completed for a number of Management Indicator Species (MIS) in 2002. These species included eastern king snake, northern dusky salamander, smooth coneflower, brook trout, brown trout, redeye bass, redbreast sunfish, striped jumprock, largemouth bass and bluegill.

Sustainable Multiple Forest and Range Benefits

Timber offered for sale in FY02 was 3.3 million cubic feet (MMCF), well under the allowable sale quantity of 14.5 MMCF per year established in the Forest Plan. More than 90 percent of the timber offered for sale in FY02 was southern pine beetle salvage. Six acres of thinning and 801 acres of seed tree removal harvest were also sold in FY02.

Waterlines were replaced at the Whetstone Horse Camp on the Andrew Pickens Ranger District.

Annual maintenance work for the three most used motorized trails, Parson's Mountain, Cedar Springs and Enoree OHV, in the piedmont was accomplished. Contracts were funded by motorized trail fees and appropriated dollars. The South Carolina Off-Road Enthusiasts also helped.

The trail construction dozer (SWECO) has been used to reduce resource problems on motorized and equestrian trails and to improve customer satisfaction. In particular, portions of the Rocky Gap Horse Trail (located within the Chattooga Wild and Scenic River Corridor) on the Andrew Pickens District were relocated.

Design work was initiated on other trails in the piedmont including the Long Cane Horse Trail with expected improvements to occur in FY04.

Forest Plan Amendment 14, which addresses guided and self-guided boating uses on the Chattooga River, was approved.

Requests continue for opening the section of the Chattooga Wild and Scenic River above Highway 28 to boating.

Plans are to complete the *Sumter National Forest Cultural Resources Overview* in Fiscal Year 2004 providing a framework for future heritage resources management. This project has been contracted.

Other

The federal government acquired 200 acres in exchange for 129 acres to be designated private land.

The Francis Marion and Sumter National Forests participated in the National Visitor Use Monitoring (NVUM) project from October 2001 through September 2002. Although the final report will be produced in FY03, preliminary results show recreational use on both forests for fiscal year 2002 was 1.130 million national forest visits (+/- 17.2 percent). There were 1.470 million site visits and an average of 1.3 site visits per national forest visit. There were approximately 52,864 wilderness site visits.

Chapter 1. Introduction

The Sumter National Forest contains 364,704 acres. Located in the central piedmont and western mountains of South Carolina, the Sumter is composed of three districts: Andrew Pickens (AP), Enoree (EN), and Long Cane (LC). The *Sumter National Forest Land and Resource Management Plan* (Forest Plan) approved on December 2, 1985, guides management activities on the Sumter. 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 are an integral part of the Forest Plan and are 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 Sumter 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 annually. Forest Service resource specialists, universities, state resource agencies, and contract specialists accomplish this work.

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 and hardwoods. This mixture is being achieved by retaining larger mast-producing hardwoods and hardwood inclusions within pine stands during harvesting and site preparation activities and by allowing natural hardwood regeneration to remain a component of the reforested stands.

No early successional habitat was established in FY02. Reforestation was delayed on 284 acres because of the freeze on expenditures to pay for fire suppression expenses in 2002.

Far fewer acres of regeneration harvest are being accomplished annually than anticipated in the Forest Plan. The Sumter planned regeneration of approximately 4,700 acres annually. However, neither reforestation

activities nor regeneration harvest took place in FY02.

Determine if the vegetation is being managed according to the Forest Plan's requirements and is making progress toward achievement of the Desired Future Condition for vegetation.

The Forest Plan objective is to have 46,200 acres or 14.5 percent of the suitable acres in the 0-10 year age class. In 2002, 17,109 of these acres were in the 0-10 year age class which is 5.4 percent of the land base determined to be suitable for timber production. Only about 2 percent of the Sumter National Forest will be in the 0-10 year age class by 2005 given current stand ages, unless regeneration trends change.

Very little early successional habitat is being created through even-aged forest regeneration. The amount of shrub/seedling habitat is declining across the Sumter 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 National Forest offered 6 acres of thinning harvest for sale in FY02. 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 percent of the hardwood forest type in the 120+ year age class. In FY02, 3,430 acres (3.6 percent) of the hardwood and hardwood/pine forest types were in the 120+ year age class. Another plan objective is to provide a minimum of 5 percent 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 2002, 10.5 percent (26,605 acres) were in the 80+ year age class. The rate of regeneration harvest over the last 5 years (309 acres/year) has pine and pine/hardwood forest types on lands suitable for timber production on a 750+ year rotation.

Table 2-1 displays the prescribed burning program on the Sumter. 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 these objectives. Hazardous fuel treatments reduce the intensity and spread of wildland fires.

Table 2-1. Sumter National Forest Prescribed Burning Accomplishments (acres)						
District	FY97	FY98	FY99	FY00	FY01	FY02
Enoree	9,547	12,359	9,938	11,476	11,546	13,672
Long Cane	7,845	5,102	5,743	5,595	3,491	3,825
Andrew Pickens	829	871	1,765	3,200	5,230	4,035
Total	18,221	18,332	17,446	20,271	20,267	21,532

While the use of prescribed fire can help keep many understory plants in a state of early succession, this tool does not significantly increase the number of acres in early successional habitat at the stand level. Overstory densities and stand compositions are mostly unaffected by this management.

Table 2-2. FY02 Vegetation Management Results and Forest Plan Objectives. (acres)		
Objective	FY02 Status	Change from FY01 to FY02
37,326 acres of Southern Yellow Pine Types < 10 years of age	16,977	Decrease from FY01. FY02 is 45% of Forest Plan objective
4,503 acres of mixed or hardwood types < 10 years of age	308	A decrease of 72 acres from FY 01.
8,333 acres of pine types > 80 years of age	26,605	Increasing
2,817 acres/year intermediate harvest	6	A decrease of 1,730 acres from FY 01.
4,700 acres/year regeneration harvest	0	A decrease of 465 acres from FY 01.

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

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. Resource specialists recommend shifting management emphasis, amending management, or monitoring when the data is inclusive or suggests 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/management/wl/MIS.pdf>) or a copy will be mailed upon request.

Chapter 3 of this report gives the status of action items related to MIS. Here is a status summary of MIS species (by habitat grouping) collected from ongoing surveys.

Upland Savannas and Woodlands

Eastern King Snake

A new challenge cost share agreement was initiated in 2001 with the Savannah River

Ecology Lab to monitor northern dusky salamander and eastern king snake on permanent plots well distributed across the Sumter. No eastern king snakes were captured during survey work in 2000, 2001, or 2002, though populations for the species are thought to be stable on the Sumter. “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.” (Metts and Gibbons, draft final report, May, 2003) No bottomland hardwood stands were logged or site preparation occurred on the Sumter in FY02.



Eastern King Snake

Smooth Coneflower

Habitat management efforts in 2001 resulted in an increase in smooth coneflower plants. A decision to treat additional acres at existing locations using tree removal and fire was completed in 2002.



Mixed Mesic Forests

Webster’s salamander

Gibbons, et.al. (2003) captured 252 Webster’s salamanders on the Long Cane

District during a two-year period with an average capture rate of 8.5 salamanders/person hour. Two new locations for Webster’s salamander were located in conjunction with this study. 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, draft final report, 2003). Webster’s salamanders were found on the Long Cane District during 2000-2001, and again in 2002, as shown in Table 2-3.

Table 2-3. Webster's Salamander Citings, Long Cane Ranger District

Year	2001	2002
Numbers of Individuals	62	82

Small Whorled Pogonia

Habitat management efforts initiated in 2001 resulted in a small increase in the number of plants this fiscal year.

Streamside Forests

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 is conducted monthly on 14 sites distributed throughout the Sumter National Forest. Northern dusky salamanders are outside their range on the Andrew Pickens Ranger District, since they typically occur only at elevations below 1000 feet. 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 Ranger District. Populations and habitat for northern dusky salamander are thought to be stable on the Sumter. Most northern dusky salamanders use riparian corridors located within 10 feet of small

streams. Northern dusky salamanders were found on both Enoree and Long Cane Districts during 2000-2001 and again in 2002, in Table 2-4.

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.

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 2-5 summarizes the status of T&E species on the Sumter and progress toward recovery.

Table 2-4. Northern Dusky Salamander on the Sumter National Forest

District	Year		
	2000	2001	2002
Enoree	10	15	33
Long Cane	1	7	16
Andrew Pickens	0	1	0

Table 2-5. Threatened and Endangered Species Status and Progress toward Recovery

Species	Progress Toward Recovery in 2002	Status
Bald Eagle	Inventory, monitoring	Stable in the state. One nest known from the Long Cane Ranger District in 2001. One new nest confirmed from the Enoree Ranger District in 2002.
Carolina Heelsplitter	Inventory, monitoring	Seven individuals located within Cuffytown and Mountain Creeks during 2001-2002 (Upper Stevens and Turkey Creek watersheds, respectively).
Florida Gooseberry	Inventory	Two populations in the state. One stable population known from the Long Cane Ranger District.
Persistent Trillium	Inventory	Not found on the Sumter to date. Possible habitat on the Andrew Pickens Ranger District.
Red-Cockaded Woodpecker	Inventory	Extirpated from the Forest.
Relict Trillium	Inventory	Not found on the Forest to date.
Small Whorled Pogonia	Inventory, habitat management	Declined from 53 plants in 1995 to 15 plants in 2000. Habitat management including prescribed fire and mid-story removal were conducted on two sites in 2001-2002.
Smooth Coneflower	Inventory, habitat management	Increased from 1,047 plants in 1993 to 1,283 in 2000. One site, thought to extirpated, had 27 plants in 2001. Habitat management including prescribed fire and mid-story removal were conducted on four sites in 2001-2002.

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 percent growth loss to several plant species. Table 2-6 allows a comparison 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 is a possibility that extremely sensitive species on the Enoree District may have a 10 percent growth loss. Ozone exposures are greater on the Andrew Pickens and Long Cane. Continued ozone exposures could have some impact on the health of individual plants that are

Table 2-6. Seasonal Ozone Exposures at Four Monitoring Sites in South Carolina				
Location	Site ID	Maximum	W126	N100*
Abbeville County (1997)	450010001	0.099	29.417	0
Abbeville County (1998)	450010001	0.120	50.134	14
Abbeville County (1999)	450010001	0.106	44.710	13
Abbeville County (2000)	450010001	0.104	42.708	1
Abbeville County (2001)	450010001	0.106	34.555	4
Abbeville County (2002)	450010001	0.115	43.777	5
Edgefield County (1997)	450370001	0.099	29.381	0
Edgefield County (1998)	450370001	0.122	55.456	26
Edgefield County (1999)	450370001	0.110	40.016	5
Edgefield County (2000)	450370001	0.093	35.315	0
Edgefield County (2001)	450370001	0.087	25.949	0
Edgefield County (2002)	450370001	0.109	34.340	13
Oconee County (1997)	450730001	0.096	52.525	0
Oconee County (1998)	450730001	0.108	63.837	17
Oconee County (1999)	450730001	0.102	74.658	3
Oconee County (2000)	450730001	0.098	40.142	0
Oconee County (2001)	450730001	0.092	44.561	0
Oconee County (2002)	450730001	0.106	56.937	4
Union County (1998)	450870001	0.098	31.034	0
Union County (1998)	450870001	0.111	40.252	6
Union County (1999)	450870001	0.116	35.451	7
Union County (2000)	450870001	0.096	32.895	0
Union County (2001)	450870001	0.100	31.892	1
Union County (2002)	450870001	0.108	34.086	3
	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

sensitive. It is unlikely that ozone is causing 10 percent or more growth loss for any of the southern pine species.

Particulate matter is the second pollutant of concern on the Sumter 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 (PM₁₀), and 2) fine particulate matter that is 2.5 microns and smaller in size (PM_{2.5}). Both types are monitored by the SCDHEC at several locations near the Sumter (Tables 2-7 and 2-8). Furthermore, particulate matter is also measured by the IMPROVE program at Shining Rock

Wilderness, which is 20 miles north of the Andrew Pickens Ranger District. In the year 2001, the maximum 24-hour PM₁₀ concentration in Aiken County was 36 micrograms per cubic meter (ug/m³), while the annual average was 17.1 ug/m³ (Table 2-7). The PM₁₀ values recorded near the Sumter are below levels of concern for human health for both the 24-hour average (150 ug/m³) and annual average (50 ug/m³). Table 2-8 presents the results for the fine particles. Maximum 24-hour fine particle concentrations are below the level of concern for human health (65 ug/m³); however, the annual average fine particle concentration is either close or have exceeded levels considered unhealthy for people (15 ug/m³) near the Long

Cane, and possibly the Enoree Districts. The range in the 1995 through 2001 average reconstructed fine particle mass at Shining Rock Wilderness was 7.43 to 9.06 ug/m³. No particulate matter was available from the EPA or IMPROVE website for the year 2002 when this analysis was performed.

What is visibility like near the Forest?

The closest visibility monitoring sites to the Sumter is at Shining Rock

Table 2-7. Monitoring Results for Particulate Matter 10 Microns (PM10) and Smaller in Size for the Year 2001*

Location	Site ID	Maximum 24-hour (ug/m3)	Annual Average (ug/m3)
Aiken County	450030003	36	17.1

*The National Ambient Air Quality Standard (NAAQS) is violated if the annual average is 50 ug/m³ or greater, or the maximum 24-hour average for the 99th percentile during a 3-year period is 150 ug/m³ or greater.

Table 2-8. Monitoring Results for Particulate Matter 2.5 Microns (PM2.5) and Smaller in Size for the Years 1999 and 2001*

Location (County)	Site ID	1999 Maximum 24-hour (ug/m ³)	1999 Annual Average (ug/m ³)	2000 Maximum 24-hour (ug/m ³)	2000 Annual Average (ug/m ³)	2001 Maximum 24-hour (ug/m ³)	2001 Annual Average (ug/m ³)
Edgefield	450370001	36.3	15.13	31.5	14.78	31.6	13.01
Greenwood	450470003	36.0	15.71	34.5	15.51	31.4	13.97
Oconee	450730001	33.9	13.42	32.7	12.63	42.7	11.82

* The National Ambient Air Quality Standard is violated if the average of 3-years of annual means is 15 ug/m³ or greater (multiple community oriented monitors can be averaged together), or the 3-year average of the 24-hour concentration for the 98th percentile (using the maximum population oriented monitor in an area) is the 65 ug/m³ or greater.

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 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/m³ (fall) and 15.6 ug/m³ (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 percent) 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?

No data have been compiled to estimate the amount of pollutant emission from Forest Service activities on the Sumter National Forest. Emission estimates are needed for at least the following Forest Service activities: prescribed and wildland fires.

How has pollutant emissions changed near the Sumter?

Our nation has had significant reductions in air pollution emissions through the Clean Air Act since the 1970s. The 1999 “Sumter National

Forest Monitoring and Evaluation Report” was the last time emissions changes were reported. Occasionally, new emission inventories become available upon which to evaluate how pollution emissions are changing or going to change. In 1993, the SAMI produced an emissions inventory for the base year of 1990 and then predicted future emissions in the year 2010. The year 2010 was chosen since there are emission reduction programs currently in place to reduce nitrogen oxides and sulfur dioxides by 2010. In 1990, the SAMI emissions inventory listed 44 point sources of pollution which emitted 5000 tons per year or more of nitrogen oxides and/or sulfur dioxide and are within 120 miles of the Forest. Recent and future emission estimates for 11 counties intersecting the Sumter (Table 2-9), as well as all other counties within 120 miles (Table 2-10) were also examined for the Sumter. Within the 11 counties the emissions of volatile organic compounds, nitrogen oxides, sulfur dioxide, and fine particles are predicted to decrease by 2010. The emissions of particulate matter (PM₁₀) are predicted to increase slightly by the year 2010. Note, the volatile organic compound listed in Tables 2-9 and 2-10 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 most likely do not adequately reflect the total emissions from forestry prescribed fires (and agricultural fires) anticipated in the 11 counties (797 tons in the year 1990), or the region.

Emissions of air pollution from counties within 120 miles are likely to have an impact on the air quality of the Sumter. Table 2-10 shows the future emission estimates of volatile organic compounds, nitrogen oxides and sulfur dioxide compounds are likely to decrease by the year 2010, while the two particulate matter categories are expected to increase slightly. However, significant decreases in both nitrogen dioxides and sulfur dioxides as a result of the North Carolina Clean Smoke Stacks bill were not included in the SAMI inventory. This legislation was passed after the SAMI emission

Table 2-9. Emission estimates (tons per year) for 11 counties intersecting the Sumter National Forest.

Estimates (Year)	Volatile Organic Compounds	Nitrogen Oxides	Sulfur Dioxide	Particulate Matter (PM10)	Fine Particles (PM2.5)
1990	35,408	26,464	10,501	53,538	14,500
2010	30,308	18,607	5,857	54,611	14,266

Table 2-10. Emission estimates (tons per year) for the counties within 120 miles of the SNF.

Estimates (Year)	Volatile Organic Compounds	Nitrogen Oxides	Sulfur Dioxide	Particulate Matter (PM10)	Fine Particles (PM2.5)
1990	1,443,212	1,431,405	1,559,787	1,553,975	446,605
2010	1,304,484	1,093,311	1,552,424	1,592,771	465,604

inventories were prepared. The emissions of nitrogen oxides and sulfur dioxides from North Carolina will be reduced in the future by 70 percent from North Carolina’s coal-fired power plants. The regional reductions in sulfur dioxide and nitrogen oxide emissions planned by the year 2010 should result in decreased ozone exposures, improved visibility, and decreases in fine particle concentrations on the Sumter.

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 NAAQS for all criteria pollutants. Table 2-11 shows the fourth highest 8-hour average for the monitoring season (proposed NAAQS). Assuming the results are representative of certain portions of the Sumter 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. An area will be designated as non-attainment for ozone if a monitoring site has a 3-year average of the

fourth highest 8-hour average of 0.085 ppm or greater. Similarly, there could be numerous areas of South Carolina that violate the new particulate matter standard. Any portions of the Forest designated as non-attainment for one or more criteria pollutants 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.

How many applications for new sources of air pollution were reviewed in 2001?

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. This work is accomplished by reviewing and commenting on Prevention of Significant Deterioration (PSD) applications. 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 impact occur to the air quality related values, and 3) to meet the

Table 2-11. Summary of Ozone Monitoring Data for the Proposed National Ambient Air Quality Standard *.

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

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

national goal to protect and improve visibility in the Class I area. The Sumter worked on three applications in FY03. Comments were made on the modeling protocol for proposed Cherokee Falls electrical generating facility, and initial work was conducted on the Rainey Generation Station (Anderson, SC). A determination was made that no Class I analysis was needed for the R. R. Donnelley facility since it would only be

emitting volatile organic compounds. 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 populations were at outbreak levels across all of the Sumter in 2002. 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 District, in particular, will likely have increased mortality in oak stands in the coming years due to 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. Executive Order 13112 charges federal agencies with preventing the introduction and spread of invasive species on the National Forests. 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 which are 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 methods, 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



Hemlock wooly adelgid
(*Adelges tsugae*)

Burrell's Ford by entomologists from State and Private Forestry. This exotic forest pest that was first reported in the western US in the 1920s and in the eastern US in the 1950s. Today, its range is spreading at a rapid rate 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 maybe release more into the wilderness area.

Sub-Issue 1.3 – Watershed Condition

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, Executive 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 on the Sumter, the Geographic Information System (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. 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 the 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 utilizing 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 districts to help us reach our goals in using native grasses and trees to stabilize and improve soil conditions. Monitoring of the SC 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 FY02, agreement with the SC Forestry Commission was reached to conduct BMP compliance checks on forestry activities. However, limited time has been spent conducting checks due to the work load of each agency relative to southern pine beetle activity.

The effects of thinning and prescribed burning on eroded areas are being studied in Chester County on the Enoree Ranger District. This is to ensure activities do not damage soils or adversely affect soil improvement activities or productivity. A preliminary report is available on the initial effects associated with the multi-year study in cooperation with the Southern Research Station.

Southern pine beetle activities dominated much of the timber program for FY02. The growing SPB epidemic seems to be correlated to extended drought conditions experienced in much of South Carolina. The drought has 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 been considered in environmental analysis of proposed projects. In FY02, about 120 sites were treated on the

Enoree Ranger District, and erosion control has been completed on approximately 80 sites at the time of this document. Erosion control was not completed on the other 40 sites because of the concern over potential archeological site damage and dry weather conditions at that time. The erosion control work will be completed in FY03. Temporary erosion control measures were implemented following timber salvage operations. About 90 sites were treated on the Long Cane District, and all erosion control work has been completed. Gully stabilization and restoration continue to be important. Technology sharing with other agencies and resource professionals is also provided when possible. About 28 sites of cut and leave were treated on the Andrew Pickens District, and no erosion control work was needed.

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 through time 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 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 tries to cooperate 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 have interest in participating with private landowners but have limited 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. Some partnership efforts with nearby landowners are in progress in conjunction with the Chattooga River Large Scale Watershed Restoration Project on the Andrew Pickens Ranger District.

Several of the ongoing monitoring programs in cooperation with Clemson University concerned with aquatic macro-invertebrates, mussels, crayfish and other organisms were completed in FY02. These organisms are indicators of water quality. Most of the work so far has been on the Long Cane and Andrew Pickens Ranger Districts. Data on sampling results related to aquatic macro-invertebrates, mussels, crayfish, snails and other organisms were provided and made available in 2002.

Air pollutants may be a major source of mercury accumulation within some predatory fish species in South Carolina, especially in watershed areas dominated by wetlands (Koman, 2003). FS student hydrologist, Tara Koman, has summarized the current literature and conducted Geographic Information System (GIS) analyses relative to the potential for mercury issues, noting that most of the problems lie below the fall line along the coast. Wetlands are known to be able to convert the mercury to the toxic methylmercury, the organic form that can bioaccumulate in the food chain. Because of

this analysis, mercury toxicity is not considered a significant problem on the Sumter National Forest.

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 FY02, the agreement with the South Carolina Forestry Commission to conduct compliance checks will 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 farming activities in the past. Although many of these areas have been treated, active gullies and gull 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; therefore, 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. 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 improve site conditions with native grasses are actively in progress as they offer some potential to increase site productivity, while allowing increased prescribed burning and thinning activities that are 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. Native plants are being used to establish and improve site conditions. Although more expensive to establish, they will handle nutrient, moisture, insect, disease, and burning stresses used to promote healthy and resilient forest conditions, and maintenance costs will be lower.

Activities during FY02 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 – ATVs) and horse trails as 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.

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. Another research-based study is under consideration that will evaluate the effects of frequent and high intensity fire on the moderate to high site soil areas within the piedmont in Edgefield county on the Long Cane Ranger District. Again, this proposal is with collaborative work with the Southern Research Station in Charleston, SC.

Some severely rutted sections of OHV and horse trails have been relocated. Some problem roads and trails have been closed or decommissioned, and dispersed recreation within riparian areas has been stopped.

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 will limit effects on the critical resource areas. Continued evaluations of road and trail construction and maintenance, timber harvesting, thinning, wildlife openings, firelines, and landscape burning activities are in progress. These

evaluations are often in the planning stages before activities are implemented. Evaluations 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 some roads, OHV trails, and firelines as problem areas. Since then, the Sumter 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 have included seasonally closing OHV trails, training, improved frequency and design of maintenance measures. 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 work load and timing of treatments.

Most of the soil and water improvements accomplished on the Enoree District over the last several decades were again reviewed as a result of the continuing drought in South Carolina. As initially brought to our attention from a concerned member of the public, some localized areas of past treatments had failed. We revisited most of 100 past treatment sites and any repairs made in FY00 to identify and address any additional problem areas. Some localized maintenance treatments were recommended. 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 will wait another year or two to review the results of those areas fertilized in FY00. 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 were given priority in FY01 and FY02. 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 more gentle 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 these facts with some of the prescribed fire and thinning research in progress on the Sumter.

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 FY02 helped move the Sumter toward the desired conditions set forth in the Forest Plan. The following are examples:

Signs at developed recreation sites and trails were improved. A start to addressing one of the primary issues from visitors. Additionally, agency presence was increased and services enhanced during high use periods (weekends and holidays) by rearranging staff work schedules. Fee Demo proceeds were used to help fund improved services at all developed

sites where fees are collected. Services included more frequent cleaning, installing new accessible picnic tables and fire grills, site hardening, providing portable rest room facilities, improving beach and swimming areas (Long Cane Ranger District).

The popular Whetstone Horse Camp in the mountains had waterlines restored, while low use, poorly located toilets that were becoming costly to operate and maintain were decommissioned on the Enoree and Andrew Pickens Ranger Districts. Also, remnants of old vaults in three other areas were crushed and filled for health and safety considerations.

Based on feedback from visitors to the Chattooga National Wild and Scenic River, changes were proposed to the Forest Plan to improve public boating experiences on the river. Amendment 14 to the Forest Plan was developed to address these concerns, and the decision to implement these changes was signed.

To provide high quality, resource sensitive trails, the Sumter increased frequency of trail maintenance by a combination of appropriated and fee demo funds, as well as through partnerships and volunteer efforts. For example, annual maintenance activities for the three high-use motorized trails in the piedmont were accomplished via contracts funded through motorized trail fees and appropriated dollars, along with help from the South Carolina Off-Road Enthusiasts.

Increasing use of the forests' SWECO trail dozer across the Sumter has improved customer satisfaction with trails and at the same time started to mitigate some of the resource problems associated with the higher use, higher impact motorized and equestrian trails.

Portions of the popular Rocky Gap Horse Trail in the mountains were relocated onto more sustainable side-hill alignments. This relocation mitigates resource impacts to the Chattooga Wild and Scenic River, reduces trail operation and maintenance costs, and improves customer satisfaction. The Long Cane Horse Trail was also analyzed for realignment and pertinent

sections flagged on-the-ground for relocation. Implementation of the Long Cane Horse Trail project will occur in FY04 through a grant from the Recreational Trails Fund Program.

The Horn Creek Trail at the Lick Fork Lake Recreation Area, popular among mountain bicyclists, was also analyzed for realignment and pertinent sections relocated. This project was leveraged with grant funds and the help of the Southern Off-Road Bicycling Association.

Planning and design of new projects to meet trail demand included:

- Extension of the cross-state Palmetto Trail on the Enoree Ranger District (which includes the design of a 120 foot span trail bridge over a remote section of the river funded with grant money); and
- Expansion of the Enoree OHV Trail through the construction of additional trail miles in the "more difficult" category (funded with grant money) – this project also involves realigning the existing trail onto sustainable locations as well as hardening the trail surface.

Although progress was made in the trails program in FY02, obstacles to achieving the desired conditions in the Forest Plan are still present. One of the biggest concerns relates to the alignment of motorized and equestrian trails, coupled with the lack of trail maintenance. Many trails were not properly located on the landscape, but were simply "ridden" in by the users. These trails have created erosion problems and higher than normal wear and tear compounded by the traditional lack of maintenance (lack of funds). These problems are now being addressed by relocating and realigning existing trails, and increasing maintenance.

Other observations in FY 02:

- Scenery management reviews across the Sumter indicate that visual quality objectives in the Forest Plan are being met;
- Motorized trails continue to be the highest use trails on the piedmont districts;
- Trail work accomplished on motorized trails continues to be well received, particularly work accomplished with the SWECO trail tractor. Its ability to maintain narrow trail corridors, and provide a more remote trail experience (as opposed to a roaded experience), as well as the ability to do the work quickly and efficiently make it well received.
- Drought conditions continue in South Carolina for a fourth year affecting boating use levels on the Chattooga Wild and Scenic River;
- Requests continue for opening the section of the Chattooga Wild and Scenic River above Highway 28 to boating;
- 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.

The Sumter’s roads were constructed and reconstructed to carry untended traffic volumes safely and efficiently. Utilizing the Forest Service road construction, maintenance, 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. No new miles of road construction were designed in FY 02.

In FY02, the Sumter National Forest continued the road condition survey program to determine the condition of the road system and the amount of deferred road maintenance. The updated survey identified \$21.69 million dollars of maintenance needed on the 1,052.8 miles of road on the Sumter National Forest. The completion of all road condition surveys is now scheduled for the end of FY 05 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 effort and road decommissioning. This will continue the trend of a reduction in the total road mileage.

Table 2-12. Status of Roads on the Sumter National Forest in FY 02	
FY 02 Road Status	Miles
Roads Constructed	0.0
Roads Reconstructed	4.7
Roads Decommissioned	6.0
Total Opened Roads	653.2
Total Closed Roads	399.6

Sub-Issue 2.3 – Human Influences

The federal government acquired 200 acres of land in FY 02 in exchange for 129 acres which became privately owned.

The Long Cane Ranger District completed an environmental assessment on the Candy Branch Gold Mine and a Decision Notice was signed to implement the mining operation. A lawsuit was filed in Federal Court in Columbia and the case is still pending.

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

Roadless Areas

The Sumter National Forest has four roadless areas on the Andrew Pickens District that are being maintained to retain their roadless character.

Wilderness Areas

The Andrew Pickens District contains the only wilderness on the Sumter: 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 trail 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. 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. Amendment #14 to the Forest Plan was approved on August 23, 2002, regarding guided and self-guided boating on the river.

Boating on the Chattooga River above highway 28 is prohibited.

There are 8 other rivers that are eligible for wild and scenic status based on an assessment of outstandingly remarkable values. These rivers were evaluated in the revision to the Forest Plan; however no decision has been made on any final designations.

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 FY02, 3.3 million cubic feet (MMCF) was offered for sale out of an allowable sale quantity of 18.2 MMCF per year.

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

In FY 02, more than 90 percent of the timber offered for sale was southern pine beetle salvage. Six acres of thinning and 801 acres of seed tree removal harvest were also sold in FY 02. Precommercial thinning and fertilization 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. No regeneration harvest units were offered for sale during FY02. Average size the previous fiscal year was 52 acres. 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. Project analysis and some current thinking on the fragmentation of wildlife

habitats indicate that larger size limits may be desirable for addressing fragmentation issues where they may exist. Adjacency and the definition of what constitutes an opening are often more problematic than actual stand sizes.

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.

Salvage sales were conducted in parts of the Calhoun Experimental Forest during 2002. 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.

This item is generally evaluated during the 5-year Forest Plan reviews or during plan revision. The Proposed Revised Land and Resource Management Plan for the Sumter National Forest has evaluated suitability for timber production. Outside of the plan revision, no lands identified as unsuitable for timber production are suitable in FY 02.

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.

The Sumter has no expectations regarding other forest products.

Sub-Issue 2.8 – Heritage Resources

Ensure the protection of significant cultural resources from degradation and destruction

(From the Forest Plans: The forest manages heritage resources in accordance with federal legislation and the various standards and guidelines contained in federal regulations and the Forest Service Manual.)

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 protected in place during any project or activity that might adversely affect them.

The forest's fiscal year program of work included inventory of 7,971 acres and more than 68 miles of national forest system lands in support of various projects and land management activities. This inventory resulted in the recording of 281 new archaeological sites. Of these 281 sites 36 were determined to be eligible or potentially eligible for listing in the National Register of Historic Places.

A total of 357 projects were reviewed for heritage resources in FY 02. Large projects included a 4,555 acre survey in the Indian Creek Analysis Area on the Enoree Ranger District, a 1,146 acre survey in the Chauga Analysis Area on the Andrew Pickens Ranger District, and a 2,085 acre survey in the Rocky Creek Analysis Area on the Long Cane Ranger District. A widespread southern pine beetle epidemic resulted in the salvage of hundreds of acres of infected trees on the piedmont districts. Under a Memorandum of Understanding with the South

Carolina State Historic Preservation Officer (SHPO), many of the harvested areas will be inventoried for heritage resources in FY 03 following the completion of salvage activities. Cut and leave methods were used to treat southern pine beetle areas on the Andrew Pickens Ranger District. The forest inventoried approximately 55 miles of fire lines constructed in support of the prescribed fire and wildfire suppression program.

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 2002

The full scope of archaeological site looting, vandalism, and other threats is not known due to the small sample of sites monitored. 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 trails are also causing erosion and damage on some sites. The use of metal detectors to locate and dig for metal artifacts on historic sites is widespread. Plowing of firelines and wildlife fields are a concern as these activities can 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 lookout towers that are in need of repair, restoration, or documentation

Forest Response to Sites at Risk

The Forest continues to identify and monitor archaeological sites and historic buildings 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 the forest in meeting its obligation to protect heritage resources.

A fence was installed around the base of the Parson's Mountain Lookout Tower on the Long Cane Ranger District to restrict access and vandalism. A fence was also replaced around the Parson's Mountain Gold Mine to keep the public away from a hazardous mine shaft. Boundary lines were repainted on 16 previously recorded potentially eligible or eligible sites.

Public Participation

The Sumter supports public participation in the management of historic properties through such programs as Passports In Time (PIT). Anyone interested in working with the Forest Service should contact the PIT clearinghouse at P.O. Box 31315, Tucson, AZ 85751-1315 or call toll free 800-281-9176, or on the internet at www.passportintime.com.

There continues to be a growing interest in the historic cemeteries on the forest as interested local historic groups and families seek help from the Forest Service concerning the preservation and protection of the 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 for 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 used for 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 providing a framework for future heritage resources management.

The forest needs to monitor and determine the effects of unauthorized activities and uses on archaeological sites including use of off road vehicles, horse trails, and woods roads. The effects of management activities such as tilling wildlife fields and construction of firelines need to be evaluated as well.

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.

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 budgeted 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.

Table 2-14. Returns to Counties	
County	FY 2002 Full Payment
Abbeville	\$143,056.66
Chester	\$76,378.57
Edgefield	\$191,048.55
Fairfield	\$68,311.85
Greenwood	\$65,963.31
Laurens	\$129,169.65
McCormick	\$302,757.32
Newberry	\$349,115.44
Oconee	\$493,091.11
Saluda	\$26,957.14
Union	\$369,639.63

Sub-Issue 3.2 – Evaluating New Information

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

Southern pine beetle populations were at outbreak levels across the Sumter National Forest during 2002.

Efforts are underway to determine sites that can be restored to shortleaf pine.

Boating on the Chattooga River above highway 28 is currently prohibited. There is interest and potential conflicts among forest users as to whether this activity should be permitted or not.

A decision to allow gold mining on the Long Cane Ranger District has been challenged in Federal Court in Columbia, South Carolina. A decision is expected sometime in late 2003 or early 2004.

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 five-year monitoring results. An amendment was approved that addresses boating levels on the Chattooga River.

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 percent fund or electing to receive their share of the average of the three highest 25 percent payments during the period of 1986 through 1999, called the full payment option. Twenty-five percent 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.

Chapter 3. FY03 and 04 Action Plan and Status

Actions Not Requiring Forest Plan Amendment or Revision

a) Action: Prescribed burn smooth coneflower sites on a 2-year rotation

Responsibility: District staff.

Date: Ongoing

Status: Coordination with district fire program accomplished as needed. Action item no longer needed.

b) Action: Establish permanent plots on Long Cane and Andrew Pickens Ranger Districts to monitor a subset of the ginseng populations.

Responsibility: Forest Botanist and District Biologists; SO Inventory and Monitoring Staff for Funding.

Date: Ongoing

Status: Partnership developed with National Forests in North Carolina to revisit all known ginseng locations in addition to permanent plots. Action item no longer needed.

c) Action: Continue to support the monitoring of permanent points on Enoree, Long Cane and Andrew Pickens Districts to monitor the status of northern dusky salamander and ensure species persistence on the Forest.

Responsibility: Forest Botanist and District Program Managers; Supervisor's Office Inventory and Monitoring Staff for Funding

Date: Ongoing

Status: Representatives from each Piedmont District attended 1-day identification training for northern dusky salamander lead by Brian Metts from the Savannah River Ecology Lab. Most of these salamanders occur within 10 meters of small stream edges. Following State Best Management Practices should result in the protection of habitat. Districts should survey for northern dusky salamanders in project areas that have the potential to affect them.

A new challenge cost share agreement was initiated in 2001 with the Savannah River Ecology Lab to monitor northern dusky salamander and eastern king snake on permanent plots well distributed across the Forest. Action item no longer needed.

d) Action: Inventory and then develop a monitoring program for brook trout populations using a stream fisheries community approach. Determine the habitat characteristics of brook trout reference streams on the Andrew Pickens District.

Responsibility: District biologists and forest fisheries biologist

Date: Ongoing

Status: Population monitoring was conducted on one brook trout stream on the Andrew Pickens Ranger District in 2002 at two fish survey sites established in Pigpen Branch. Brook trout were sampled at both sites. No other trout species were sampled in 2002; 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. These two sites will be surveyed again in 2003.

Four brook trout streams were inventoried to determine fish distribution and abundance using diver counts. Fish movement barriers were also identified by the surveys. The streams included Pigpen Branch, Crane Creek, King Creek, and Indian Camp Branch. Very low fish densities were observed in all four streams. There are no apparent barriers between existing populations of brook trout and brown trout within the streams. Further study results can be found in “Fish Species Distribution and Fish Movement Barriers in Four Streams Considered for Southern Strain Brook Trout Reintroduction, Andrew Pickens Ranger District, Sumter National Forest, South Carolina” produced by the Center for Aquatic Technology Transfer, Southern Research Station, Blacksburg, Virginia.

Electrofishing efforts in King Creek resulted in the capture of brown trout only. No brook trout were sampled from the stream. A potential barrier upstream of Burrell’s Ford Road is being assessed for possible brook trout reintroduction efforts. Electrofishing efforts in Crane Creek revealed brook trout presence upstream of Big Bend Road and brown trout upstream of the culvert and downstream of the road, with no apparent barrier to fish movement between the populations.



Habitat inventory using the basin-wide visual estimation technique (BVET) were conducted in 2003 in six brook trout streams. These included Bad Creek, Crane Creek, Indian Camp Branch, Ira Branch, Jacks Creek, and Pigpen Branch. These surveys, along with the 2001 King Creek inventory, are detailed in “Summary of Basinwide Habitat Survey Results for Seven

Streams on the Andrew Pickens Ranger, Sumter National Forest, South Carolina, 2001-2002.” Results indicate a lack of pool habitat within all the streams, except Bad Creek. This is reflected in the low number of large woody debris size classes that create pool habitats. Dominant and subdominant substrates indicated better spawning habitat in Indian Camp Branch, Ira Branch, and Jacks Branch. Sand was a major component in the other streams.

e) Action: Expand population monitoring of rainbow and brown trout beyond the Chattooga River. Determine the habitat characteristics of trout streams on the Andrew Pickens District.

Responsibility: District biologists and forest fisheries biologist.

Date: Ongoing

Status: Monitoring was conducted on the Chauga River and Tamassee Creek in 2002. Two sites were established in 2001 on each stream to survey for brown trout, rainbow trout, redeye bass, striped jumprock and redbreast sunfish. The downstream site was not sampled in 2002. Brown trout, rainbow trout, striped jumprock and redbreast sunfish were sampled in the upstream site. In Tamassee Creek, striped jumprock and redbreast sunfish occurred at both sites. Rainbow trout was sampled in the downstream site. In addition to MIS, all species that were captured in the samples sites were recorded to get an accurate assessment of the aquatic community. These two streams will be monitored again in 2003. Additional trout streams will be inventoried in 2003.

The Chattooga Coalition conducted its seventh sample in fifteen years to monitor the brown trout population at the Big Bend site on the Chattooga River in 2002.

f) Action: Inventory and then develop a monitoring program for redeye bass, redbreast sunfish and striped Jumprock populations using

a stream fisheries community approach on the Andrew Pickens Districts.

Responsibility: District biologists and forest fisheries biologist.

Date: Ongoing

Status: Monitoring was conducted on the Chauga River and Tamassee Creek in 2002. Two sites were established in 2001 on each stream to survey for brown trout, rainbow trout, redeye bass, striped jumprock and redbreast sunfish. The downstream site was not sampled in 2002. Brown trout, rainbow trout, striped jumprock and redbreast sunfish were sampled in the upstream site. In Tamassee Creek, striped jumprock and redbreast sunfish occurred at both sites. Rainbow trout were sampled in the downstream site. In addition to MIS, all species that were captured in the samples sites were recorded to get an accurate assessment of the aquatic community. These two streams will be monitored again in 2003.

g) Action: Inventory and then develop a monitoring program for redbreast sunfish and striped Jumprock populations using a stream fisheries community approach on the Enoree and Long Cane Districts. Determine the habitat characteristics of piedmont streams.

Responsibility: District biologists and forest fisheries biologist

Date: Ongoing

Status: Monitoring was conducted for striped jumprock and redbreast sunfish on six streams at eleven sites on the Enoree Ranger District and on eight streams at fifteen 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 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. These streams will be monitored again in 2003. Most of these streams exhibited signs of drought effects. Results of fish monitoring efforts and BVET surveys are documented in "Habitat and Electrofishing Survey Results for Piedmont Streams on the Sumter National Forest, South Carolina, 2001-2002.

h) Action: Continue to monitor largemouth bass and bluegill sunfish in recreational fish impoundments and develop pond management plans to efficiently manage these populations and habitat.

Responsibility: District technicians and biologists.

Date: Ongoing

Status: Largemouth bass and bluegill sunfish were monitored in Lick Fork Lake and Parson's Mountain Lake by district personnel in coordination with SCDNR biologists on the Long Cane Ranger District. It is expected that the impoundments on the Long Cane, Enoree and Andrew Pickens will be monitored each year.

Pond Management Plans were not developed in 2002. Plans should be developed in 2003 to determine the needs and priorities of the management of this resource.

i) 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: FY02

Status: No new points were added in FY02.

j) Action: Add survey points in fire-maintained habitats for Eastern bluebird, yellow-breasted chat and white-eyed vireo on the Andrew Pickens District.

Responsibility: District and forest biologists

Date: FY02

Status: No new points were added in FY02.

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

Responsibility: District and forests biologists

Date: FY02

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

l) Action: Determine emission estimates for prescribed burn projects on the Sumter.

Responsibility: Districts and Supervisor's Office

Date: Ongoing

Status: No emission estimates were determined for prescribed burn projects on the Sumter.

Actions Which Require Forest Plan Amendment or Revision

a) Action: Develop a list of species to be removed from the forest-wide MIS species list. The intent would include but not be limited to removing those species that are not good indicators of habitat or they are difficult to monitor.

Responsibility: Supervisor's Office Resource and Planning Staffs

Date: FY01-02

Status: The MIS species list was revised during the Forest Plan Revision process. Public comments have been received and will be analyzed before the final environmental impact statement and record of decision.

b) Action: Amend the existing Forest Plan to update and change some of the ways recreational boating uses are managed on the Chattooga Wild and Scenic River on the Andrew Pickens District.

Responsibility: District and Supervisor's Office

Date: FY00 and 01

Status: Amendment #14 to the existing Forest Plan was approved regarding boating on the Chattooga River. A - List of Preparers

Appendix A. Preparers

The following individuals contributed to this report:

Jim Bates	Forest Archaeologist
Bill Hansen	Forest Hydrologist
Ed Hedgecock	Forest Engineer
Jim Knibbs	Environmental
Coordinator	
Dennis Law	Forest Soil Scientist
Robert Morgan	Forest Archaeologist
Gary Peters	Forest Wildlife Program
Manager	
Robin Roecker	Forest Ecologist/ Botanist
Oscar Stewart	Resource Staff Officer
Tony White	Planning, Engineering, Recreation, and Heritage Resources Staff Officer
Gail White	Public Affairs Specialist
Joe Robles	Recreation Specialist
Robbin Cooper	Landscape Architect

Jay Purnell	Forest Silviculturist
Larue Bryant	Engineer
Eric Schmeckpeper	GIS
Bill Jackson	Air Specialist
Jeanne Riley	Program Manager

Appendix 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 6a (January, 1990)

Amend the Plan to close the general forest area to OHVs.

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.

Appendix C. Summary of Research Findings and Research Needs

What species of crayfish occur on the Sumter 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 Sumter? What is the population status?

Sumter National Forest Fiscal Year 2002 Monitoring and Evaluation Annual Report

Comment Form

If you have comments on this report, please complete this form and mail it to
Forest Supervisor
Francis Marion and Sumter National Forests
4931 Broad River Road
Columbia, SC 29212

Name _____

Address _____
