

Sumter National Forest

Monitoring and Evaluation Annual Report

Fiscal Year 2004



US Department of Agriculture
Forest Service
Southern Region



Sumter National Forest
Fiscal Year 2004
Monitoring and Evaluation Report

Jerome Thomas
Forest Supervisor
4931 Broad River Road
Columbia, South Carolina 29212-3530

www.fs.fed.us/r8/fms

September 2005

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Acronyms

AP	Andrew Pickens
ASQ	Allowable Sale quantity
BCD	Biological Conservation Database
BMP	Best Management Practices
BVET	Basin-wide Visual Estimation
DBH	Diameter at breast height
ER	Enoree Ranger District
EPA	Environmental Protection Agency
FIA	Forest Inventory and Analysis
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
NVUM	National Visitor Use Monitoring
OHV	Off-highway vehicle
PETS	Proposed, endangered, threatened, and sensitive species
PPM	Parts per million
PM	Particulate matter
PSD	Prevention of Significant Deterioration
RPA	Resource Planning Act
SAMI	Southern Appalachian Mountains Initiative
SCDHEC	South Carolina Department of Health & Environmental Control
SCDNR	South Carolina Department of Natural Resources
SPB	Southern Pine Beetle
T&E	Threatened and endangered
USDA	United States Department of Agriculture
WMA	Wildlife Management Area

Table of Contents

Forest Supervisor's Certification	3
Executive Summary of Monitoring and Evaluation Results and Report Findings	5
Chapter 1 – Introduction	9
Chapter 2 – Monitoring Results and Findings	9
Chapter 3 – FY 2005, 2006, and 2007 Action Plan and Status	42
Appendixes	
A – List of Preparers	
B – List of Forest Plan Amendments	
C – Summary of Research Findings and Research Needs	
D – References	

Forest Supervisor's Certification

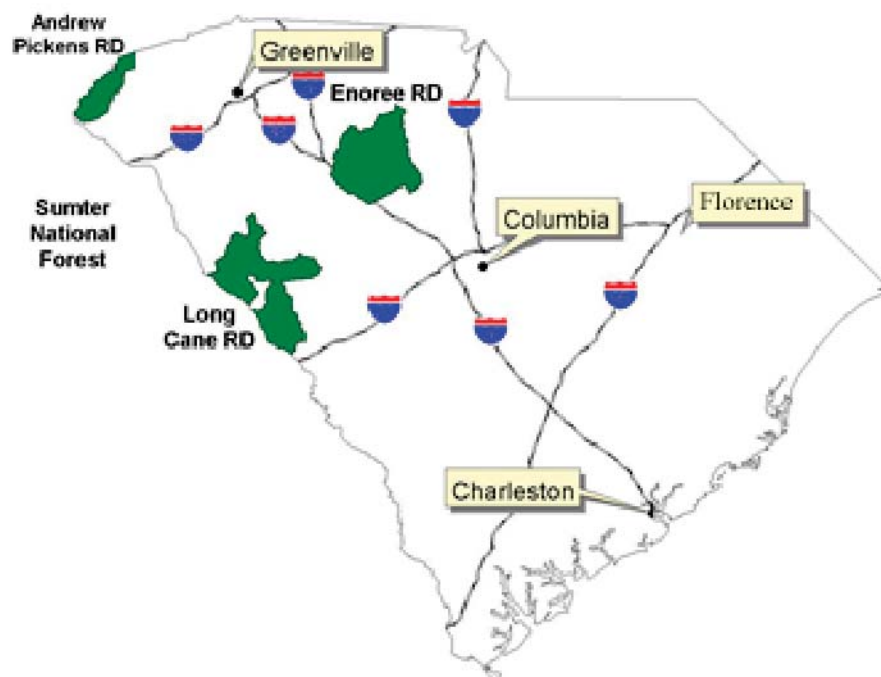
I have evaluated the monitoring results and recommendations in this report. I have directed that the Action Plan developed to respond to these recommendations be implemented according to the time frames indicated, unless new information or changed resource conditions warrant otherwise. I have considered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

With these completed changes, the *Land and Resource Management Plan* (Forest Plan) is sufficient to guide management activities unless ongoing monitoring and evaluation identify further need for change.

/s/Tony L White (for)

September 29, 2005

JEROME THOMAS
Forest Supervisor



Executive Summary of Monitoring and Evaluation Results and Report Findings

The *Land and Resource Management Plan* (Forest Plan) provides guidance on how the Sumter National Forest (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 following monitoring results are based on the recently completed Forest Plan signed in January of 2004.

Summary of Key Results and Findings:

Ecosystem Condition, Health and Sustainability

Biological Diversity

The acreage of loblolly pine on the Andrew Pickens Ranger District, 6,832 acres, remains unchanged. This compares to Objective 8.01 which seeks to restore 2,000 – 6,000 acres of native communities on sites occupied by loblolly pine on the Andrew Pickens District.

The district sold the Village Creek timber sale in FY 2004. This sale was comprised of loblolly pine removal harvests. An Environmental Assessment for the Chauga loblolly project was in process in 2004. It proposes similar type harvest, as does the Cedar Creek project, also in process in 2004.

The forest presently has only a small amount of woodland and savanna conditions, estimated at 400 acres. This number remained unchanged in FY 2004. This compares to Objective 8.02 that provides 8,000 – 11,000 acres of woodlands in the piedmont and 4,000 – 5,000 acres of woodlands in the mountains. Environmental assessments were in process for 3 projects that proposed woodland or savanna conditions. These projects and the areas proposed for woodland conditions follows.

Cedar Creek project, Andrew Pickens	207 acres
Lower Enoree/Indian Creek project, Enoree	447 acres
Renew project, Long Cane	64 acres

At current funding and staffing levels, and with the flow of woodland/grassland/ savanna/shrub-land projects being planned, Objective 8.02 is unlikely to be fully achieved during the planning period.

The forest presently has about 205,000 acres of loblolly and Virginia pine on the piedmont. This compares to Objective 8.03 that wants to create conditions to restore dry-mesic oak, oak-pine, and pine-oak forest communities on 20,000 acres currently in loblolly pine in the piedmont. Activities in FY 2004 to increase oak types totaled approximately 64 acres. In future years, large acreages of release activities to favor oak and hickory are expected. Significant acreages of thinning in management prescription 9G2 (Restoration of upland oak-hickory and mixed pine-oak-hickory forests) are also expected.

The forest currently shows 3,176 acres of shortleaf pine, an increase of 17 acres over the baseline acreage on 7/27/03. This compares to Objective 8.04 that seeks an increase of shortleaf pine and shortleaf pine/oak communities on 2,000 to 10,000 acres in the piedmont. The forest is making good progress in meeting this objective.

The forest currently has 7,415 acres of white pine types on the Andrew Pickens Ranger District. This is no change from baseline acreage in FY2003. This compares to Objective 8.06 that wants to restore more diverse native communities on 1,000 to 2,000 acres currently occupied by white pine stands.

No projects were implemented in 2004 to create gaps or alter major forest community or conditions. This compares to Objective 8.05 that seeks to increase structural diversity by creating canopy

gaps in 1 to 5 percent of closed canopy mid- and late-successional mesic deciduous forest.

No projects were implemented in 2004 to create wetland habitats, improve or restore mast producing hardwood stands, or alter major forest community or conditions. This compares to Objective 9.01 that seeks to construct and restore wetlands on 600 acres in the riparian corridor on the piedmont over a 10-year period.

The forest has an abundance of mid-late successional stage acreage, and late successional stage acreage in comparison with desired conditions for management prescriptions suitable for timber production. In contrast, management prescriptions are far below the desired condition for early successional stage forest.

Data to estimate Management Indicator Species (MIS) trends remain in transition because the new Regional database is still under construction. Forest and aquatic communities including stream fish communities and habitat, aquatic macroinvertebrate community, aquatic habitat conditions and pond game fish were monitored. The population status of native species is considered to be currently stable throughout all or a significant portion of their range, with the exception of brook trout populations within South Carolina and the American eel. There are 11 recreational fishing ponds on the Sumter National Forest consisting of a total of 89 acres. Largemouth bass and bream are the primary fish in the ponds. Habitat enhancement was accomplished in 20 pond acres and 25 reservoir acres on the Enoree and Long Cane Ranger Districts.

The Andrew Pickens applied herbicide to 250 acres to improve table mountain pine communities on the district in FY 2004. On the Long Cane district, 25 acres of mechanical chipping enhanced structure and composition within the post oak savanna botanical area. This compares to Objective 12.01 that seeks to restore 500 to 2,500 acres of table mountain pine forest over the 10-year period.

Efforts to conserve threatened, endangered and sensitive species on the Sumter National Forest are ongoing. The Sumter National Forest plays a particularly important role in the recovery of the mussel Carolina heelsplitter, occurring on the Long Cane district, the smooth coneflower occurring on the Andrew Pickens, and the candidate for federal listing occurring on the Enoree district, Georgia Aster. Habitat for each of these species is being managed

optimally, to promote recovery and/or the prevention of federal listing. Investigation of the mechanisms affecting decline of small whorled pogonia are ongoing

Bobwhite quail harvest appears to continue trend downward state-wide, the deer harvest appears to be somewhat stable, wild turkey harvest appears to be stable to slightly increasing and bear harvest, as expected fluctuates, with the availability of hard mast. In 2004 mast production was down slightly. This resulted in bears expanding their range in foraging for food making them more susceptible to hunting. Consequently bear harvest was higher than 2003.

Forest Health

Prescribed burning increased from 10,105 acres in FY03 to 19,194 acres in FY 2004. The forest health goal for the Sumter National Forest is to prescribe burn 23,600 acres annually. Though meeting burning objectives is increasingly more difficult to accomplish due to urbanization, smoke and other issues, the forest is making significant progress toward meeting this annual burning objective. This trend is expected to continue.

Approximately 12 per cent of the forest is currently in condition class 1. These are defined as lands where the departure from the natural regime, including vegetation characteristics, fuel composition, fire frequency, and other associated disturbances is low. Increasing the number of acres in condition class 1 though the use of fire, non-commercial, and commercial mechanical treatments will be a slow process.

Prescribed fire emissions on the Sumter National Forest continue to be the most important Forest Service activity impacting air quality, because it releases fine particles into the atmosphere. In FY 2004, the amount of fine particulate matter released into the atmosphere was almost double the FY 2003 levels from 333 tons/year to 633 tons/year. The three fine particulate monitoring sites closest to the Sumter National Forests had increases in both the 24-hour and annual average fine particle concentration in 2004, but the National Ambient Air Quality Standard (NAAQS) was not exceeded.

In FY 2004, 2,699 acres of commercial thinning were offered. The Sumter is making good progress in achieving objective 17.01, which states,

“Improve forest health on 10,000 to 50,000 acres of pine forests by reducing stand density.”

The Sumter National Forest treated 319 acres in 2004 for non-native invasive species, including kudzu, Chinese privet, Chinese wisteria, and mimosa. A forest-wide environmental assessment and decision allowing the treatment of up to 2,500 acres in non-native plants were completed.

An inventory of acres infested with non-native invasive plants is ongoing. In a summary of forest inventory and analysis (FIA) plot data for the state of South Carolina, Seventy-two per cent of the plots sampled in the piedmont and mountains combined contained at least one non-native species. Japanese honeysuckle was the most common non-native invasive species (32 per cent) and Chinese privet the second most common (11 per cent).

Watershed Condition

In 2004, a total of 33 acres were treated to improve soil and water conditions. This included 11 acres of stabilization with erosion control, 12 acres of site reshaping and restoration, 7 acres in treating off trail uses or abandoned trails and 3 acres of native grass treatments for producing native grasses for erosion control work on gully treatments, trails and other exposed areas. This level of implementation is substantially below the plan level indicated in Objective 1.01 of 1,500 acres over a decade.

In 2004, 1,732 acres were fertilized. All areas were reviewed and/or sampled in the field before treatment to be sure that they met the criteria for needing fertilization. The annual treatment amount of soil productivity improvements is higher than needed to reach the planned level indicated in Objective 5.01 of 8,000 acres over a decade. At this rate of implementation, it is likely that the objective in the Forest Plan would be exceeded in a few years.

In general, forest management activities are not major pollution sources that impact water quality. The forest has maintained a strong adherence to and intends to fully implement Best Management Practices (BMP) to limit water quality and other effects on the land. This intent is also formalized in the Forest Plan in forest wide standards FW-1, FW-2 and others that include specific measures that are intended to protect water quality and address associated soil and water conservation issues.

Forest and district staffs are implementing the riparian requirements and guidelines. Several meetings have been held in the field to discuss riparian identification, delineation, functions and values. No acres of riparian area were inventoried.

Sustainable Multiple Forest and Range Benefits

Recreation Opportunities

National Visitor Use Monitoring (NVUM) was done on the Francis Marion and the Sumter National Forests in 2002. This monitoring estimated visitor use for all activities including recreational facilities and trails. Sampling strategy does not allow separation of the use by forest.

A part of this monitoring survey was a visitor satisfaction survey. Most visitors were satisfied with the scenery, condition of the natural environment, conditions of the recreational facilities, the feeling of safety and the helpfulness of the employees. All visitors were found to be less satisfied with the cleanliness of the restrooms, the availability of information on recreational and the interpretive displays, signs and exhibits.

No trend information is available at this time. Beginning in 2007, NVUM will be done approximately every 5 years. At that time we will have enough information to develop trend information.

No monitoring of recreational activities' effects on riparian areas or water quality was done in 2004, other than during routine maintenance.

In 2004, a resource closure was implemented which allows trails managers to close off-highway vehicle (OHV) trails quickly to respond to weather conditions. Trails that are saturated with water can quickly become damaged if OHV are allowed to use the trail too soon after rains. This, along with the yearly closure (January through March), has generally improved the conditions of the OHV trails, despite the extremely wet weather conditions during the 2004 hurricane season.

Maintaining trails, both motorized and non-motorized, is ongoing throughout the year. Although backlog trail maintenance was reduced during the first part of the fiscal year, a series of hurricanes affecting both the coast and the mountains erased any gains that

were made during the year and slightly increased the backlog.

Proposed projects on the Sumter National Forest met the established Recreation Opportunity Spectrum and Scenic Integrity Objectives.

Roadless Areas/Wilderness/Wild and Scenic Rivers

Field observation tells us that Ellicott Rock Wilderness use is concentrated in areas around and adjacent to the trail system and the Chattooga Wild and Scenic River. There are areas, especially camping along the trail, that are impairing wilderness characteristics.

Projects on the eligible and designated rivers are evaluated during the environmental analysis. Several projects were reviewed during 2004. All project proposals protected the outstandingly remarkable values and free-flowing conditions of the rivers. We will monitor project implementation from 2005 through 2008 to validate the findings of that analysis.

The Chattooga River annual use is available through 2004. Total boating use for the river for 2004 was approximately 64,000.

Heritage Resources

Current archeological monitoring targets more visible sites with a known history of vandalism or other damage. Vandals and artifact collectors continue to use metal detectors to search historic sites and remove artifacts. Plowing wildlife fields is damaging some sites and exposing artifacts for illegal collection. Eight fire lookout towers are historic sites in need of repair, restoration and documentation.

Organizational Effectiveness

The Sumter National Forest offered 1.3 million cubic feet (MMCF) of forest products for sale in management prescription 10B in FY 2004. Total Sumter offer (all management prescriptions) in FY 2004 was 4.7 MMCF. This compares to an allowable sale quantity of 13.9 MMCF/year during the 10-year period.

The road program continued to emphasize reconstructing roads to meet the intended traffic volumes safely and to lessen the impacts to the

forest. Using the Forest Service road construction, maintenance and reconstruction standards, current best management practices and technical assistance from other resource experts, road designs emphasized mitigating negative impacts to resources focusing on watershed health. Road projects for timber harvesting activities were mainly for resurfacing and culvert replacement. No new roads were constructed in FY 2004.

The forest continued to conduct road condition surveys in FY 2004 to access the backlog of deferred maintenance. The current updated survey identified \$23,246,091 dollars of maintenance needed on the 1,047 miles of road on the Sumter National Forest.

Road mileage is expected to continue to slowly decrease because road decommissioning mileage has been more than the new roads acquired through land acquisitions.

An additional 84 acres were acquired on the Sumter National Forest during this fiscal year.

No integrated resource reviews were completed this year. For FY 2005 an integrated resource review is scheduled on the Andrew Pickens.

Chapter 1.

Introduction

The Sumter National Forest is 364,704 acres in the central piedmont and western mountains of South Carolina. It has three districts: Andrew Pickens (AP), Enoree (EN), and Long Cane (LC). The *Land and Resource Management Plan* (Forest Plan) approved on January 15, 2004, guides management activities. These lands are managed to provide goods and services for timber, outdoor recreation, water, wildlife, fish and wilderness following multiple-use goals and objectives.

Monitoring and evaluation is an integral part of the Forest Plan 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 determine if the forest is moving toward or achieving the desired conditions for resources.

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

Chapter 2

Monitoring Results and Findings

Monitoring questions address if the desired conditions, goals and objectives of the Forest Plan are being met and if Forest Plan standards are effective. Monitoring questions are further refined during Forest Plan implementation into monitoring elements and monitoring task sheets. The monitoring questions discussed in this chapter are numbered based on the monitoring questions in Chapter 5 of the Forest Plan. The monitoring elements reflect those presently defined in Appendix E of the Forest Plan and the monitoring task sheets.

Issue 1. Ecosystem Condition, Health and Sustainability

Sub-Issue 1.1 – Biological Diversity

MQ 1: Are rare ecological communities being protected, maintained and restored?

Information

This monitoring question is responsive to goal 12, objectives 12.01 and 12.02 and standards FW-30, FW-31 and FW-32. Objective 12.01 is to restore 500 to 2,500 acres of table mountain pine forest over the 10-year planning period. Objective 12.02 is to restore 1 to 5 per cent of the riparian corridor on slopes less than 8 per cent into the canebrake community in the piedmont over the 10-year planning period. The monitoring elements are defined as follows:

1. Baseline acreage, condition, and distribution of rare communities on the forest
2. Rare communities restored; specifically table mountain pine dominated communities and canebrakes.

Results

1. No results for baseline acreage, condition and distribution of rare communities on the forest were obtained for this year. This monitoring element needs to be reported every 5 years.
2. Related to the second monitoring element, the Andrew Pickens conducted 250 acres of herbicide application to improve table mountain pine communities in FY 2004. On the Long Cane district, 25 acres of mechanical chipping enhanced structure and composition within the post oak savanna botanical area.

Findings

No additional action is needed.

MQ 2: Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?

Information

This monitoring question is responsive to goal 8, objectives 8.01, 8.02, 8.03, 8.04, 8.05 and 8.06. Objective 8.01 is to restore 2,000 – 6,000 acres of native communities on sites occupied by loblolly pine on the Andrew Pickens District over the 10-year planning period. Objective 8.02 is to provide 8,000 – 11,000 acres of woodlands in the piedmont and 4,000 – 5,000 acres of woodlands on the mountains on dry-xeric sites in woodland, savanna, open grassland, or shrubland conditions with fire associated rare communities preferred over the 10-year planning period. Objective 8.03 is to create conditions to restore dry-mesic oak, oak-pine, and pine-oak forest communities on 20,000 acres currently in loblolly pine in the piedmont over the 10-year planning period. Objective 8.04 is to increase shortleaf pine and shortleaf pine/oak communities on 2,000 to 10,000 in the piedmont. This will be done on sites with low risk of littleleaf disease. Objective 8.05 is to increase structural diversity by creating canopy gaps in 1 to 5 per cent of closed canopy mid and late-successional mesic deciduous forest (including mixed mesophytic and mesic oak forests). Gaps are defined as small openings smaller than 2 acres in size and are designated to release mast producing species, particularly hard mast (oak, hickory, walnuts, etc.) and

soft mast bearing trees (cherry, black gum, persimmon, etc.) over the 10-year planning period. Objective 8.06 is to restore more diverse native communities on 1,000 to 2,000 acres currently occupied by white pine stands. Prioritize xeric to intermediate sites over the 10-year planning period.

The monitoring elements are defined as follows:

1. Restore native communities on sites occupied by loblolly pine on the Andrew Pickens District.
2. Provide for dry-xeric sites in the piedmont and mountains with rare communities preferred.
3. Create conditions to restore dry-mesic oak, oak-pine, and pine-oak communities on the piedmont.
4. Increase shortleaf pine and shortleaf pine/oak communities on the piedmont.
5. Restore sites currently occupied by white pine stands to diverse native communities.
6. Increase structural diversity by creating gaps in 1 to 5 percent of closed canopy mid- and late-successional mesic deciduous forest.
7. Trends in MIS population indices in relationship to major forest community/conditions. Frequency of occurrence trends in hooded warbler, scarlet tanager, pine warbler, Acadian flycatcher and brown-headed nuthatch.

Results

1. The acreage of loblolly pine on the Andrew Pickens, 6,832 acres, remains unchanged in the Geographical Information System (GIS) database. (See Objective 8.01.) The Andrew Pickens sold the Village Creek timber sale in FY 2004. This sale was comprised of loblolly pine removal harvests. An environmental assessment for the Chauga loblolly project was in process in 2004. It proposes similar type harvest, as does the Cedar Creek project, also in process in 2004.
2. Existing areas (See Objective 8.02):

Acres	District	Area
360	Andrew Pickens	Garland Tract
54	Long Cane	Post Oak Savanna

The FSveg database is still being brought online. The forest intends to identify a field in this database that can be used to track this condition.

In FY 2004, environmental assessments were in process for three projects that proposed woodland or savanna conditions. These projects, and the areas proposed for woodland conditions follow.

Cedar Creek project, Andrew Pickens	207 acres
Lower Enoree/Indian Creek project, Enoree	447 acres
Renew project, Long Cane	964 acres

3. Queries in the GIS database gave the following results. (See Objective 8.03.)

	ACRES	
	Loblolly & Virginia Pine	Oak Types
All piedmont	205,109	53,498
Mgt Rx 9G2	32,100	9,518

Activities in FY 2004 to increase oak types on the piedmont:

39 acres Oak planting, Long Cane RD
25 acres Commercial thinning, mgt rx 9G2
 64 acres Total

In future years, large acreages of release activities to favor oak and hickory are expected. Significant acreages of thinning in management prescription 9G2 are also expected.

- The GIS database currently shows 3,176 acres of shortleaf pine, an increase of 17 acres over the baseline acreage on July 27, 2003. (See Objective 8.04.)
- GIS database currently shows 7,415 acres of white pine types on the Andrew Pickens. No change from baseline acreage. (See Objective 8.06.)
- No projects were implemented in 2004 to create gaps or alter major forest community or conditions. (See Objective 8.05.)
- Data to estimate MIS trends remain in transition because the new Regional database is still under construction.

Findings

At current funding and staffing levels, and with the flow of woodland/grassland/savanna/shrub land

projects being planned, Objective 8.02 is unlikely to be fully achieved during the planning period.

Gap creation and forest stand composition changes need to be integrated into silvicultural and other projects.

Emphasis needs to be placed on efforts to bring the Regional database into operational use for estimating forest-wide MIS trends.

MQ 3: Are key successional stage habitats being provided?

Information

This monitoring question is responsive to goals 8 and 13, desired conditions for management prescriptions 7E2, 8A1, 8B2, 9A3, 9G2, and 10B, and standard FW-33. The monitoring elements are defined as follows:

- Trends in early, mid and late Successional Habitat by prescription group (Table 2-1)
- Acres, conditions and distribution of existing old growth.
- Trends in MIS population indices in relationship to major forest community/conditions to help indicate the effects of management on successional habitats; frequency of occurrence trends in prairie warbler, Swainson’s warbler, field sparrow, and American woodcock.

Results

- Trends in early, mid and late successional habitat by prescription.
- The old growth monitoring item only needs to be reported every five years.
- Data to estimate MIS trends remain in transition because the new Regional database is still under construction.

Findings

Related to Table 2-1, the same pattern holds across all of the above management prescriptions: an abundance of mid-late successional stage acreage, and late successional stage acreage in comparison with desired conditions. In contrast, all management prescriptions are far below the desired condition for early successional stage forest. Many projects are in

progress to address this need. However, budgets and personnel are also a limiting factor in achieving the desired conditions. National Environmental Policy Act (NEPA) process compliance and costs are also a factor.



Table 2-1. Trends in early, mid and late successional habitat by prescription.

Mgt Rx	Total Forested Acres	Successional Stage	ACRES			Desired Percentage	Actual Percentage
			AP	EN	LC		
7E2	60,663	Early	285	630	760	4-10	3
		Mid to Late	9,489	20,339	20,128	50+	82
		Late	6,740	9,420	11,304	10+	45
8A1	38,040	Early	659			4-10	2
		Mid to Late	30,807			50+	81
		Late	19,013			10+	50
8B2	7,888	Early		79	177	10-17	3
9A3	11,000	Early		73		4-10	1
		Mid to Late		10,187		50+	93
		Late		3,644		10+	33
9G2	42,990	Early		1,263	446	4-10	4
		Mid to Late		20,741	14,059	50+	81
		Late		8,576	8,894	10+	41
10B	136,438	Early		3,063	3,415	10-17	5
		Mid to Late		59,010	45,822	20+	77
		Late		35,579	28,422	10+	47

Emphasis needs to be placed on efforts to bring the Regional database into operational use for estimating forest-wide MIS trends.

MQ 4: How well are key terrestrial habitat attributes being provided?

Information

This monitoring question is responsive to goals 3, 4, 8 and 9, objective 9.01 and standard FW-18. Objective 9.01 is to construct or restore wetlands on 600 acres in the riparian corridor in the piedmont over the 10-year planning period.

The monitoring elements are defined as follows:

1. Acres, conditions and distribution of wetland habitats and ephemeral wetlands;
2. Trends in MIS population indices in relationship to major forest community/ conditions; frequency of occurrence trends in pileated woodpecker;
3. Trends in hard mast production capability.

Results

1. No projects were implemented in 2004 to create wetland habitats, improve or restore mast producing hardwood stands or alter major forest community or conditions.
2. Data to estimate trends remain in transition because the new Regional database is still under construction.
3. No data were collected related to trends in hard mast production capability.

Findings

Wetland habitat development and hardwood restoration activities need to be incorporated into silvicultural and other projects.

Emphasis needs to be placed on efforts to bring the Regional database into operational use for estimating forest-wide trends.

MQ 5: What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?

Information

This monitoring question is responsive to goals 3 and 4 and objectives 4.01 and 11-OBJ-2. Objective 4.01 is to create and maintain dense understory of native vegetation on 1 to 5 percent of the total riparian corridor acreage during the 10-year planning period. Objective 11-OBJ-2 is to restore and enhance stream habitat and aquatic communities in 50 miles of streams. This includes woody debris, stream bank stabilization, brook trout restoration, and in stream habitat improvement.

The monitoring elements are defined as follows:

1. Trends in the composition and abundance of macroinvertebrate communities
2. Trends in the composition and abundance of stream fish communities
3. Trend in aquatic habitat conditions. Perennial and intermittent streams are managed in a manner that emphasizes and recruits large woody debris. Improve, rehabilitate, or restore aquatic habitat
4. Trend in the composition and abundance of impoundment fish communities.

Results

1. Existing population conditions for macroinvertebrate communities are unknown. Crayfish and mussels were collected in conjunction with the fish community monitoring in 2003. Crayfish collected during fish community surveys are listed in Table 2-2 and identified in Eversole and Jones (2004). Mussel species collected are listed in Table 2-3. Mussel species were identified by John Fridell, US Fish and Wildlife Service.



Table 2-2. Crayfish species collected in 2003	
Watershed/Stream	Species
Enoree Ranger District	
Broad River	
UT Clarks Creek	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Cambarus (Puncticambarus) acuminatus</i>
Enoree River	
Fosters Branch	<i>Cambarus (Depressicambarus) latimanus</i>
Means Branch	<i>Cambarus ((Depressicambarus) sp.</i>
	<i>Cambarus (Depressicambarus) latimanus</i>
Patterson Creek	<i>Cambarus ((Depressicambarus) sp.</i>
	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Cambarus. (Puncticambarus) acuminatus</i>
Quarters Branch	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Procambarus (Scapulicambarus) troglodytes</i>
Sispring Branch	<i>Cambarus (Depressicambarus) latimanus</i>
Tyger River	
Sparks Creek	<i>Cambarus (Depressicambarus) latimanus</i>
UT Tyger River	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Cambarus (Puncticambarus) acuminatus</i>
Long Cane Ranger District	
Long Cane Creek	
Big Curltail Creek	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Cambarus (Puncticambarus) raneyi</i>
Bold Branch	<i>Cambarus (Depressicambarus) latimanus</i>
Candy Branch	<i>Cambarus (Depressicambarus) latimanus</i>
Little Curltail Creek	<i>Cambarus (Depressicambarus) latimanus</i>
Stevens Creek	
Camp Branch	<i>Cambarus (Depressicambarus) latimanus</i>
Lick Fork	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Procambarus (Scapulicambarus) troglodytes</i>
Rock Creek	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Procambarus (Scapulicambarus) troglodytes</i>
Wilson Branch	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Procambarus (Scapulicambarus) troglodytes</i>
UT* Rock Creek	<i>Cambarus (Depressicambarus) latimanus</i>
	<i>Procambarus (Scapulicambarus) troglodytes</i>
Andrew Pickens Ranger District	
East Fork	<i>Cambarus (Cambarus) bartonii</i>
Chattooga River	<i>Cambarus (Jugicambarus) asperimanus</i>
Pigpen Branch	<i>Cambarus (Cambarus) bartonii</i>
Tamassee Creek	<i>Cambarus (Cambarus) bartonii</i>
Jacks Creek	<i>Cambarus (Cambarus) bartonii</i>
	<i>Cambarus (Jugicambarus) asperimanus</i>
*Unnamed Tributary	

Table 2-3. Mussel species collected in 2003		
Watershed/ Stream	Species	
Enoree Ranger District		
Broad River		
Broad River	<i>Utterbackia imbecillis</i>	Paper pondshell
Enoree River		
Hunting Creek	<i>Villosa delumbis</i>	Eastern creekshell
Means Branch	<i>Elliptio angustata</i>	Carolina lance
Peges Creek	<i>Pygaenodon cataracta</i>	Eastern floater
Long Cane District		
Long Cane Creek		
UT* Parson's Mountain Lake	<i>Utterbackia imbecillis</i>	Paper pondshell
Stevens Creek		
Camp Branch	<i>Elliptio complanata</i>	Eastern elliptio
Rocky Creek	<i>Elliptio complanata</i>	Eastern elliptio
	<i>Elliptio sp.</i>	
Andrew Pickens Ranger District		
Chattooga River		
Highway 28	<i>Elliptio sp.</i>	
Highway 28 boat launch	<i>Elliptio sp.</i>	
Earls Ford	<i>Elliptio producta</i>	Atlantic spike
Falls Creek boat launch	<i>Elliptio producta</i>	Atlantic spike
Highway 76	<i>Alasmidonta varicosa</i>	Brook floater
	<i>Elliptio producta</i>	Atlantic spike
Woodall Shoals	<i>Alasmidonta varicosa</i>	Brook floater
	<i>Elliptio producta</i>	Atlantic spike
*Unnamed Tributary		

2. Stream fish inventory and monitoring sampling in Sumter National Forest streams was conducted in 2001-2004 (Tables 2-4, 2-5 and 2-6). Repetitive sampling in streams varied from year to year due to drought conditions (2002), above average rainfall (2003) and below average rainfall (2004). Dry stream channels were encountered in piedmont streams with drought and below average rainfall. A total of 28 streams have been inventoried in the piedmont (Enoree and Long Cane Ranger Districts). Monitoring samples have been conducted in 14 of those streams.

A total of 15 streams have been sampled in the mountain region (Andrew Pickens Ranger District). Monitoring samples have been conducted in five of those streams. Several streams have been sampled to determine the distribution of trout.



Rockfin Shiner , Rock Creek, Long Cane Ranger District

Table 2-4. List of fish surveys sites on the Enoree Ranger District.

Stream	Site #	Watershed	Quad	# Species Captured			
				01	02	03	04
McCluney Branch	1	Broad River	Leeds	7	6	5	
	2			4			
UT* Clarks Creek	1	Broad River	Leeds	5			
	2			9	8	2	7
	3			8	7	6	6
Fosters Branch	1	Enoree River	Newberry East			3	
Means Branch	1	Enoree River	Whitmire South/ Newberry East			7	
			Newberry NW				5
Mulberry Branch	1	Enoree River	Newberry NW				5
Ned Wesson Branch	1	Enoree River	Newberry NW				8
Pattersons Creek	1	Enoree River	Newberry NW	6	7	6	6
	2			6			
	3			6	5	6	4
Quarters Branch	1	Enoree River	Newberry East			8	
Sispring Branch	2	Enoree River	Philsons Crossroads	6	7	3	
	3			7	5	4	
South Fork Duncan Creek	1	Enoree River	Newberry NW				9
UT* Duncan Creek	1	Enoree River	Philsons Crossroads				6
UT* South Fork Duncan Creek	1	Enoree River	Newberry NW				7
Sparks Creek	1	Tyger River	Union West/Sedalia	4			
	2			8	5	5	
	3			8	5	3	
UT* Tyger River	1	Tyger River	Union West/Sedalia	6	2	6	6
	2			6	4	5	5
	3			6			

*UT = unnamed tributary.



fish shocking, Patterson Creek, Enoree Ranger District

Table 2-5. List of fish surveys sites on the Long Cane Ranger District.

Stream	Site #	Watershed	Quad	# Species Captured			
				2001	2002	2003	2004
Big Curlytail Creek	1	Long Cane Creek	Abbeville East	7			
	2			8	11		22
	3			8	18	15	21
Bold Branch	1	Long Cane Creek	Calhoun Creek	9	7	5	
	2			8	9	8	
	3			1			
Candy Branch	1	Long Cane Creek	Verdery	3			
	2			3	4	3	5
	3			3	3	3	4
Little Curlytail Creek	1	Long Cane Creek	Abbeville East			14	
McGill Branch	1	Long Cane Creek	Verdery				11
Mountain Creek	1	Long Cane Creek	Verdery				9
Byrd Creek	1	Stevens Creek	Winterseat	6			
	2			8	4	4	
Camp Branch	1	Stevens Creek	Red Hill	15	14	10	16
	2			14	10	14	13
Lick Fork	1	Stevens Creek	Colliers	10	12	16	
	2			11	11	4	
	3			7			
Miller Branch	1	Stevens Creek	Colliers	8			
Pike Branch	1	Stevens Creek	Limestone	2			
Rock Creek	1	Stevens Creek	Colliers/Red Hill	14			
	2			10	13		
	3			8	6		11
Wilson Branch	1	Stevens Creek	Limestone	5		10	8
	2			2		2	
	3			8		5	
*UT Rock Creek	1	Stevens Creek	Colliers/ Red Hill			11	

*UT = unnamed tributary.



Table 2-6. List of fish surveys sites on the Andrew Pickens Ranger District

Stream	Site #	Watershed	Quad	# Species Captured			
				2001	2002	2003	2004
Chauga River	1	Chauga River	Whetstone	8			
	2			9	10		10
Pigpen Branch	1	Chattooga River	Tamassee	3	3	3	
	2			3	2	3	
Tamassee Creek	1	Chattooga River	Tamassee	8	9	9	
	2			8		5	
Crane Creek	1	Cheohee Creek	Tamassee		1		1
	2						1
Jacks Creek	1	Chattooga River	Cashiers			1	
Townes Creek	1	Cheohee Creek	Tamassee			7	
Yellow Branch		Coneross Creek	Walhalla			4	
Bee Cove Creek		Whitewater River	Cashiers			1	
Howard Creek		Whitewater River	Cashiers			1	
Limber Pole Creek		Whitewater River	Tamassee			1	
Moody Creek		Cheohee Creek	Tamassee			1	
Wilson Creek		Cheohee Creek	Tamassee			0	
East Fork Chattooga River	1	Chattooga River	Cashiers/Tamassee			12	
	2					4	
	3					3	
King Creek	1	Chattooga River	Tamassee				5
	2				1	1	1
Fall Creek		Chattooga River	Rainy Mountain				4

Over the sampling period, 22 species were captured in Enoree Ranger District streams and 38 species in Long Cane Ranger District streams (Tables 2-7 and 2-8). The two districts reside in different major watersheds as is reflected by the number and type of fish species that occur in the streams. The Enoree Ranger District is located in the Santee Cooper watershed, and the Long Cane Ranger District is located in the Savannah River watershed. The number of species captured by watershed in 2001-2004 is displayed in Tables 2-9 and 2-10.

A total of 26 species have been captured in cool and cold-water habitats on the Andrew Pickens Ranger District (Table 2-11).

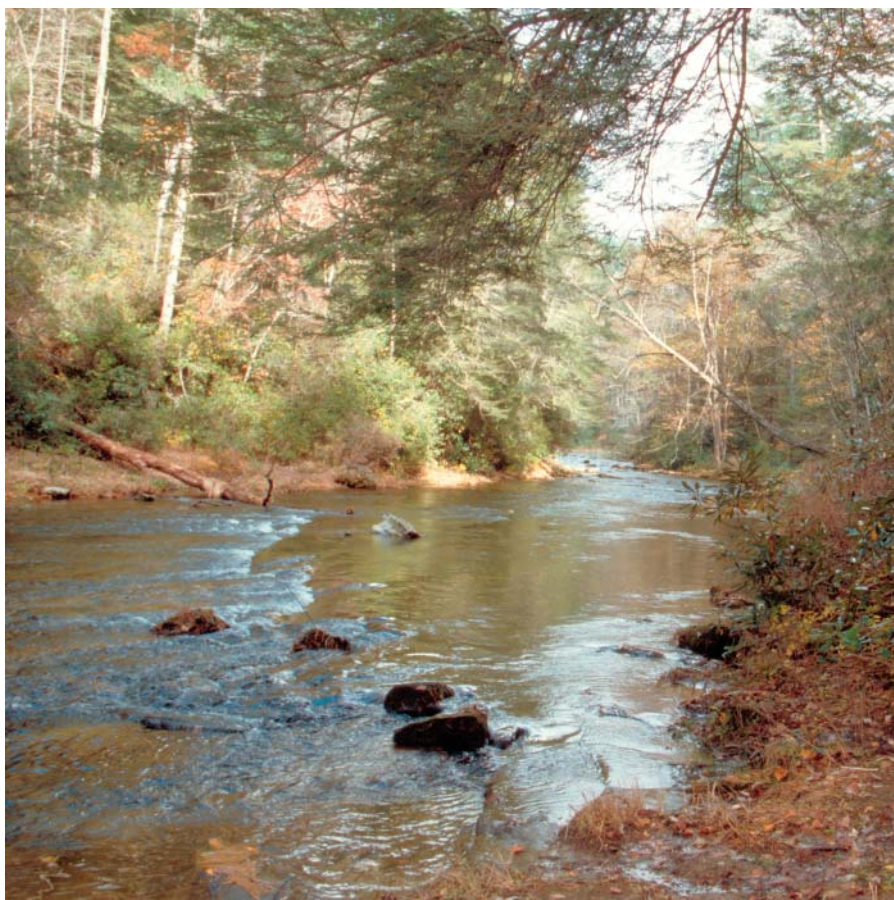


Table 2-7. Species captured by backpack electrofishing in Enoree Ranger District streams. (A total of 14 different streams were sampled in 2001-2004.)

Species		2001	2002	2003	2004
	# Watersheds	3	3	3	3
	# Streams	6	6	9	8
Catostomidae					
<i>Erimyzon oblongus</i>	Creek chubsucker	x	x	x	x
<i>Moxostoma rupiscartes</i>	Striped jumprock	x			
Centrarchidae					
<i>Lepomis auritus</i>	Redbreast sunfish	x	x	x	x
<i>Lepomis cyanellus</i>	Green sunfish	x	x		
<i>Lepomis gibbosus</i>	Pumpkinseed	x	x		
<i>Lepomis gulosus</i>	Warmouth			x	
<i>Lepomis macrochirus</i>	Bluegill	x	x	x	x
<i>Micropterus almodes</i>	Largemouth bass			x	
Cyprinidae					
<i>Clinostomus funduloides</i>	Rosyside dace	x	x	x	x
<i>Cyprinella nivea</i>	Whitefin shiner			x	
<i>Hybopsis hypsinotus</i>	Highback chub	x	x	x	
<i>Nocomis leptocephalus</i>	Bluehead chub	x	x	x	x
<i>Notropis hudsonius</i>	Spottail shiner	x	x	x	
<i>Notropis lutipinnis</i>	Yellowfin shiner	x	x	x	x
<i>Notropis scepticus</i>	Sandbar shiner			x	
<i>Semotilus atromaculatus</i>	Creek chub	x	x	x	x
Esocidae					
<i>Esox americanus</i>	Redfin pickerel	x	x	x	
<i>Esox niger</i>	Chain pickerel	x	x		
Ictaluridae					
<i>Ameiurus natalis</i>	Yellow bullhead	x	x	x	x
<i>Ameiurus platycephalus</i>	Flat bullhead			x	
Percidae					
<i>Etheostoma olmstedi</i>	Tessellated darter	x	x	x	x
Poeciliidae					
<i>Gambusia holbrooki</i>	Eastern mosquitofish	x	x	x	x



Table 2-8. Species captured by backpack electrofishing in Long Cane Ranger District streams. (A total of 14 different streams were sampled in 2001-2004.)

Species		2001	2002	2003	2004
	# Watersheds	2	2	2	2
	# Streams	10	7	9	6
<u>Anguillidae</u>					
<i>Anguilla rostrata</i>	American eel			x	
<u>Aphredoderidae</u>					
<i>Aphredoderus sayanus</i>	Pirate perch	x	x	x	x
<u>Catostomidae</u>					
<i>Erimyzon oblongus</i>	Creek chubsucker	x	x	x	x
<i>Hypentelium nigricans</i>	Northern hogsucker	x	x	x	x
<i>Moxostoma rupiscartes</i>	Striped jumprock	x	x	x	
<u>Centrarchidae</u>					
<i>Lepomis auritus</i>	Redbreast sunfish	x	x	x	x
<i>Lepomis cyanellus</i>	Green sunfish	x	x	x	x
<i>Lepomis gibbosus</i>	Pumpkinseed	x			
<i>Lepomis gulosus</i>	Warmouth	x	x	x	x
<i>Lepomis macrochirus</i>	Bluegill	x	x	x	x
<i>Lepomis marginatus</i>	Dollar sunfish				x
<i>Lepomis microlophus</i>	Redear sunfish		x	x	x
<i>Micropterus coosae</i>	Redeye bass	x	x	x	x
<i>Micropterus punctulatus</i>	Spotted bass			x	x
<i>Micropterus salmoides</i>	Largemouth bass		x	x	x
<i>Pomoxis nigromaculatus</i>	Black crappie				x
<u>Cyprinidae</u>					
<i>Clinostomus funduloides</i>	Rosyside dace	x			
<i>Hybognathus regius</i>	Eastern silvery minnow	x			
<i>Hybopsis rubrifrons</i>	Rosyface chub	x	x	x	x
<i>Nocomis leptocephalus</i>	Bluehead chub	x	x	x	x
<i>Notemigonus crysoleucas</i>	Golden shiner	x	x	x	
<i>Notropis cummingsae</i>	Dusky shiner	x	x		x
<i>Notropis hudsonius</i>	Spottail shiner	x	x	x	x
<i>Notropis lutipinnis</i>	Yellowfin shiner	x	x	x	x
<i>Notropis szepticus</i>	Sandbar shiner	x		x	
<i>Semotilus atromaculatus</i>	Creek chub	x	x	x	x
<u>Clupeidae</u>					
<i>Dorosoma cepedianum</i>	Gizzard shad			x	x
<u>Ictaluridae</u>					
<i>Ameiurus natalis</i>	Yellow bullhead	x	x	x	x
<i>Ameiurus nebulosus</i>	Brown bullhead	x			
<i>Ameiurus platycephalus</i>	Flat bullhead		x	x	x
<i>Ictalurus punctatus</i>	Channel catfish			x	
<i>Noturus insignis</i>	Margined madtom	x	x	x	x
<i>Noturus leptacanthus</i>	Speckled madtom			x	
<u>Percidae</u>					
<i>Etheostoma hopkinsi</i>	Christmas darter	x	x	x	x
<i>Etheostoma olmstedi</i>	Tessellated darter	x	x	x	
<i>Perca flavescens</i>	Yellow perch	x	x		x
<i>Percina nigrofasciata</i>	Blackbanded darter	x	x	x	x
<u>Poeciliidae</u>					
<i>Gambusia holbrooki</i>	Eastern mosquitofish	x	x	x	x

Table 2-9. Number of species captured per watershed on the Enoree Ranger District

Watershed	# Species Captured			
	2001	2002	2003	2004
Broad River	11	10	7	8
Enoree River	8	9	11	10
Tyger River	12	7	8	8

Table 2-10. Number of species captured per watershed on the Long Cane Ranger District.

Watershed	# Species Captured			
	2001	2002	2003	2004
Long Cane Creek	20	20	18	27
Stevens Creek	25	23	24	18

Of the 22 species captured in Enoree Ranger District streams, two are considered non-indigenous or introduced species to the watershed (Warren, et al. 2000). The green sunfish was captured in two streams and the yellowfin shiner was captured in 12 streams. In Long Cane Ranger District streams, there are three species considered non-indigenous and one species of uncertain status. The green sunfish was captured in 12 streams, the bluehead chub in 11 streams and the yellow perch in two streams. The channel catfish is categorized as “native or introduced status uncertain” and was captured in one stream below an impoundment that is stocked. The remaining species captured are native to the watersheds and the population status of these species is considered

Table 2-11. Species captured by backpack electrofishing in Andrew Pickens Ranger District streams. (A total of 15 different streams were sampled in 2001-2004.)

Species		2001	2002	2003	2004
<u>Catostomidae</u>					
<i>Catostomus commersoni</i>	White sucker			x	
<i>Hypentelium nigricans</i>	Northern hogsucker	x	x	x	x
<i>Moxostoma rupiscartes</i>	Striped jumprock	x	x	x	x
<u>Centrarchidae</u>					
<i>Lepomis auritus</i>	Redbreast sunfish	x	x	x	
<i>Lepomis cyanellus</i>	Green sunfish				x
<i>Lepomis gulosus</i>	Warmouth				x
<i>Lepomis macrochirus</i>	Bluegill		x	x	
<i>Micropterus coosae</i>	Redeye bass	x			
<u>Cottidae</u>					
<i>Cottus bairdi</i>	Mottled sculpin			x	x
<u>Cyprinidae</u>					
<i>Campostoma anomalum</i>	Central stoneroller			x	
<i>Clinostomus funduloides</i>	Rosyside dace			x	
<i>Hybopsis rubrifrons</i>	Rosyface chub	x	x	x	
<i>Luxilus coccogenis</i>	Warpaint shiner	x		x	
<i>Nocomis leptcephalus</i>	Bluehead chub	x	x	x	x
<i>Notropis lutipinnis</i>	Yellowfin shiner	x	x	x	x
<i>Rhinichthys cataractae</i>	Longnose dace			x	x
<i>Rhinichthys atratulus</i>	Blacknose Dace			x	x
<i>Semotilus atromaculatus</i>	Creek chub	x	x	x	x
<u>Ictaluridae</u>					
<i>Ameiurus brunneus</i>	Snail bullhead				x
<i>Ameiurus platycephalus</i>	Flat bullhead	x	x		
<u>Percidae</u>					
<i>Etheostoma inscriptum</i>	Turquoise larer	x	x	x	
<i>Perca flavescens</i>	Yellow perch	x	x		
<i>Percina nigrofasciata</i>	Blackbanded darter	x	x		x
<u>Salmonidae</u>					
<i>Oncorhynchus mykiss</i>	Rainbow trout	x	x	x	x
<i>Salmo trutta</i>	Brown trout	x	x	x	x
<i>Salvelinus fontinalis</i>	Brook trout	x	x	x	x

to be currently stable throughout all or a significant portion of their range. One American eel was captured in a Long Cane Ranger District stream in 2003. Dams on large rivers hampered upstream migration of this species, and the US Fish and Wildlife Service is presently seeking scientific information and public comment on a petition to list the American eel under the Endangered Species Act.

Of the 26 species captured in Andrew Pickens Ranger District streams, 5 are considered non-indigenous or introduced species to the watershed (Warren, et al. 2000). These include the green sunfish, yellowfin shiner, yellow perch, rainbow trout and brown trout. Brown and rainbow trout have invaded brook trout habitat and replaced this species in much of its historical range. The brook trout is designated as S2 by the SC Heritage Program. Remaining species captured are native to the watersheds and the population status of these species is considered to be currently stable throughout all or a significant portion of their range.

The trophic composition of the fish assemblage remained for the most part unchanged throughout the sampling period. Insectivores dominate the fish community on both piedmont districts, which indicates that the invertebrate food source is stable. Three predators were present in Enoree streams and five in Long Cane streams, one of which is non-indigenous. Three omnivore species were present in the Enoree streams and five in the Long Cane streams. Omnivore species increase as the physical and chemical habitat deteriorates.

Insectivores also dominate the community in Andrew Pickens streams. One predator was present in the samples and three omnivore species.

Most species captured in these streams are classified as intermediate in their tolerance to human influences, adept at exploiting particular types of disturbances. Three species captured in Enoree samples and two species in Long Cane samples are considered intolerant, or very sensitive, to human influences. Intolerant species are among the first to be decimated after disturbances and the last to re-colonize after normal conditions have returned. All of these species, except the whitefin shiner (Enoree), were present during the most of the 2001-2004 sampling years. Tolerant species increase in the population

with environmental degradation. In the streams sampled, there was no increase in tolerant species.

Most species captured in Andrew Pickens streams were also classified as intermediate in their tolerance to human influences. There were no intolerant classified species captured and two tolerant classified species were present.

3. Habitat inventory using basin-wide visual estimation (BVET) methods (Dollof et al 1993) was conducted on an additional two streams on the Enoree Ranger District in 2004. These streams are Ned Wesson Branch and Mulberry Branch in the Duncan Creek watershed (Enoree River). A total of 5.3 miles of stream were inventoried.

In addition, habitat inventory was conducted on the Andrew Pickens Ranger District in potential brook trout habitat. Streams inventoried include Bee Cove Creek, Howard Creek, Moody Creek, Wilson Creek and Emory Creek. A total of 12.6 miles of stream were inventoried.

4. The monitoring element trend in the composition and abundance of impoundment fish communities is replaced by monitoring element to maintain or improve ponds/lake habitat for recreational fisheries under monitoring question #8.

Findings

Inventories of benthic macroinvertebrate, crayfish and mollusk communities need to be accomplished.

Twenty-eight streams have been inventoried across the piedmont, and repeated samples have been conducted in 14 of those streams. Fifteen streams have been inventoried across the Mountains, and repeated samples have been conducted in five of those streams.

Twenty-one species have been captured in Enoree Ranger District streams. and 38 species have been captured in Long Cane Ranger District streams. Twenty-six species have been captured across the Andrew Pickens Ranger District.

The number of individuals captured in the 2004 sampling year increased over the number of individuals captured in 2003 in Enoree and Long Cane Ranger District streams.

Approximately 10 per cent of fish captured in Enoree Ranger District streams are considered non-

indigenous or introduced species; 13 per cent in Long Cane Ranger District streams; and 19 per cent in Andrew Pickens District streams. The population status of native species is considered to be currently stable throughout all or a significant portion of their range, with the exception of brook trout populations within South Carolina and the American eel.

Insectivores dominate the fish community in sampled streams across the forest, which indicates that the invertebrate food source is stable. Over the sampling period, there was no significant change in trophic composition that would indicate any physical or chemical deterioration of sampled streams.

Most species captured in the sampled streams are classified as intermediate in their tolerance to human influences, adept at exploiting particular types of disturbances. There were few intolerant species captured; however, there was no increase in tolerant species.

Habitat inventory was conducted in a total of 17.9 stream miles.

The monitoring element related to trends in the composition and abundance of impoundment fish communities is replaced by monitoring element to maintain or improve ponds/lake habitat for recreational fisheries and needs to be deleted.

MQ 7: What are the status and trends of federally listed species and populations or habitats for species with viability concerns on the Sumter?

Information

This monitoring question is responsive to goals 4, 10 and 12, objectives 10.01 and 10.02, and standards 9F-1 thru 9F-8 and FW-25 thru FW-28. Objective 10.01 is to maintain or restore at least 8 self-sustaining populations for smooth coneflower and if possible, 4 populations for small whorled pogonia on the Andrew Pickens, including the habitat to support them. Objective 10.02 is to maintain or restore at least 8 self-sustaining populations for Georgia aster and 1 population for Florida gooseberry on the piedmont districts, and the habitat to support them.

The monitoring elements are defined as follows:

1. Trends in recovery of threatened and endangered species, and status and distribution of some viability concern species that are not specifically

identified under other elements. Species targeted under this element will be determined through periodic review of each species status and conservation priority. Priorities will likely vary through the life of the plan as new information is available.

Results

1. District-wide inventory and monitoring for the endangered smooth coneflower, the sensitive brook floater, the sensitive Diana fritillary, and the sensitive Rafinesque's big-eared bat were conducted in FY 2004. Habitat monitoring for Carolina heelsplitter was conducted on the Long Cane district. Project-level inventory for all proposed, endangered, threatened and sensitive species (PETS) was conducted in project areas as needed.

Population and habitat enhancement for the smooth coneflower he Andrew Pickens Ranger district, where 350 smooth coneflower seedlings were planted. An additional 222 acres of habitat for smooth coneflower was enhanced through mid-story control and prescribed burning efforts. A management strategy for Georgia aster was developed on the Enoree Ranger district.

Table 2-12 summarizes the PETS species on the Sumter National Forest and their status.

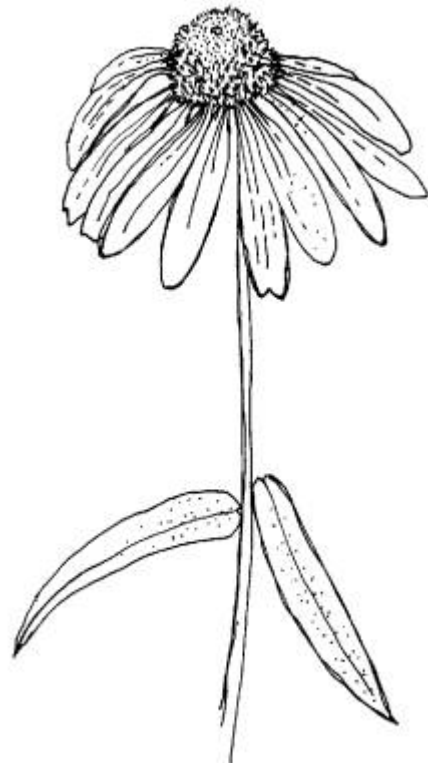


Table 2-12. PETS species on the Sumter National Forest and their status

Species	Ranking	Status
Bald Eagle	Federally Threatened	Two nests; one discovered on the Enoree in 2002; one nest on the Long Cane abandoned since 1999
Wood Stork	Federally Endangered	No known roost sites on the forest; wetlands used for late summer foraging
Carolina Heelsplitter	Federally Endangered	Critical habitat on the forest includes stream reaches within 2 watersheds on the Long Cane Ranger district
Smooth Coneflower	Federally Endangered	8 populations and 1,353 plants in 2004; 4 “self-sustaining,” the remaining 4 increasing
Small Whorled Pogonia	Federally Threatened	Species has declined on the Forest from a high of 53 plants in 1995 to 7 plants in 2004 despite protection efforts
Florida Gooseberry	Federally Threatened	Six colonies occur within one site on the Long Cane Ranger district
Persistent Trillium	Federally Endangered	Not known from the forest
Relict Trillium	Federally Endangered	Not known from the forest
Southern Appalachian Salamander	Sensitive	Hybridizes with <i>Plethodon jordanii</i> and <i>Plethodon glutinosus</i> . Common on the Andrew Pickens.



Table 2-12. PETS species on the Sumter National Forest and their status (continued)

Webster’s Salamander	Sensitive	Census in 2002-2003 documented 252 individuals on the Long Cane district, with a capture rate of 8.5 salamanders/hour
Bachman’s Sparrow	Sensitive	Few species records; species is rare on the piedmont due to lack of habitat
Migrant Loggerhead Shrike	Sensitive	No species records; agricultural habitat preferred by the species is lacking on National Forest land
Chauga Crayfish	Sensitive	Located by Eversole, in 23% of streams sampled for crayfish within Chattooga and Chauga river basins
Carolina Darter	Sensitive	Not known from the Forest but range includes the Broad River on the Enoree
Robust Redhorse	Sensitive	Stocked in the Broad River in 2004; Known historically from the Savannah River below Augusta
Diana Fritillary	Sensitive	2 locations documented on the Andrew Pickens within open, fire-maintained woodlands; thought to be common
Rafinesque’s Big-eared Bat	Sensitive	Study with Southern Research Station located one male roosting on the Andrew Pickens in 2003; large roost site in abandoned mine occurs adjacent to the Forest

Table 2-12. PETS species on the Sumter National Forest and their status (continued)

Eastern Small-footed Myotis	Sensitive	Two records from the Andrew Pickens
Brook Floater	Sensitive	Large population n the Chattooga River; intensive population sampling scheduled for 2005
Rayed Pink Fatmucket	Sensitive	Not currently known from the Forest but ranges within the Saluda watershed on the Long Cane
Indigo Bush	Sensitive	Two populations known from the Forest, one on the Enoree and one on the Long Cane
Fort Mountain Sedge	Sensitive	Four sites known on the Andrew Pickens
Radford's Sedge	Sensitive	Common on the Andrew Pickens
A Liverwort)	Sensitive	Conserved in waterfall spray communities on the Forest
Spreading Pogonia	Sensitive	Common on the Andrew Pickens but not well documented
Whorled Horsebalm	Sensitive	Common on the Andrew Pickens
Mountain Witch Alder	Sensitive	3 sites known from the Forest
Shoal's Spider Lily	Sensitive	3 sites known historically from the piedmont districts on the Forest; none relocated in 2004
Butternut	Sensitive	9 sites known from the Forest

Table 2-12. PETS species on the Sumter National Forest and their status (continued)

Fraser's Loosestrife	Sensitive	Several locations (35 based on 1995 monitoring) known from roadsides and powerline rights-of-ways within the administrative boundary of the Andrew Pickens Ranger district; 1724 plants identified at that time; threatened by roadside maintenance activities
Sweet Pinesap	Sensitive	Known from 8 sites on the Forest, thought to be much more common on the Andrew Pickens
A Liverwort	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
A Liverwort	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
Carolina Plagiomnium	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
Oglethorpe Oak	Sensitive	Several sites on the district confirmed; the majority comprised of only sprouts; species appears to be infected with fungus similar to chestnut blight
A Liverwort	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
Hartwig's Locust	Sensitive	Known from one site on the Andrew Pickens
Sun-facing Coneflower	Sensitive	This plant is locally common along roadsides near Lake Cherokee



Table 2-12. PETS species on the Sumter National Forest and their status (continued)

Southern Oconee Bells	Sensitive	Common near Lake Jocassee where it is known from 3 sites on the Forest
Georgia Aster	Federal Candidate; Sensitive	12 occurrences known on the piedmont districts; several locations threatened by roadside maintenance activities; management strategy developed in 2004
Ashleaf Goldenbanner	Sensitive	No sites documented on the Andrew Pickens Ranger district but species thought to be common
Lanceleaf Trillium	Sensitive	One site known on the Long Cane Ranger district
Nodding Trillium	Sensitive	Four sites documented on the Forest, including two on the Andrew Pickens, one on the Long Cane, and one on the Enoree
Jeweled Trillium	Sensitive	Six sites known on the Andrew Pickens including one at Station Cove
Piedmont Strawberry	Sensitive	34 sites documented on the Andrew Pickens where

Most federally-endangered species occurring on the Sumter, including bald eagle, wood stork, Carolina heelsplitter, and Florida gooseberry, appear to be stable based on population and habitat monitoring data. Recovery objectives for Carolina heelsplitter on river systems occurring on the Sumter National Forest are to establish one population in the Savannah River system to down list, and one population in the Savannah River system to de-list (Recovery Plan for Carolina heelsplitter, 1997). The Sumter National Forest manages land that includes two watersheds within the Savannah River sub-basin, which are known to support Carolina heelsplitter. The National Forest occupies 9 per cent of the Upper Stevens Creek watershed and 15 per cent of the Turkey Creek watershed. Monitoring for the species is typically conducted annually, and is based on presence/absence of individuals (adults, juveniles). The species is detected at low numbers within these watersheds, though habitat is conserved and managed under direction in the Forest Plan included as Management Area 1.

Recovery objectives for smooth coneflower include delisting when self-sustaining populations are protected in at least two counties in South Carolina (Smooth Coneflower Recovery Plan, 1995). The Sumter National Forest manages for the recovery of smooth coneflower in Oconee county, where several populations are known to occur. Smooth coneflower is increasing in Oconee county and close to achieving recovery objectives. However, continuous active management such as prescribed fire, burning, midstory control, or thinning is needed to perpetuate self-sustaining populations there.

Recovery objectives for small whorled pogonia (Small Whorled Pogonia Recovery Plan, 1992) includes the protection of a minimum of 61 sites, including a total of 20 sites having 80 stems or more throughout the range of the species. Only seven plants from four sites were documented on the Andrew Pickens in 2004. The sites on the Andrew Pickens are not close to meeting recovery objectives for the species. Specialists from the Supervisor’s Office attended a cooperative meeting on the management of small whorled pogonia in the Southern Appalachians, at the Asheville field office for the US Fish and Wildlife Service on January 22, 2004.

Cooperators pooled monitoring data and concluded that the species was in decline within the Region,

likely due to lack of low intensity management, however research was needed to identify causal mechanisms including responses to different types and intensities of management.

Findings

Efforts to conserve threatened, endangered, and sensitive species on the Sumter National Forest are ongoing. The Sumter National Forest plays a particularly important role in the recovery of the mussel Carolina heelsplitter, occurring on the Long Cane district, the smooth coneflower occurring on the Andrew Pickens, and the candidate for federal listing occurring on the Enoree district, Georgia aster. Habitat for each of these species is being managed optimally, to promote recovery and/or to prevent federal listing. Investigation of the mechanisms affecting decline of small whorled pogonia is ongoing.

MQ 8: What are the trends for demand species and their use?

Information

This monitoring question is responsive to goals 8, 22 and 23 and objective 23.01. Objective 23.01 is to maintain or improve 150 acres of ponds/lake habitat for recreational fisheries.

The monitoring elements are defined as follows:

1. Trends in harvest data for bobwhite quail, deer, turkey, bear; wildlife management area (WMA) permit sales, turkey tags and bear permits issued.
2. Trends in MIS population indices in relationship to major forest community/conditions. Frequency of occurrence trends in bobwhite quail, eastern wild turkey and black bear.
3. Maintain or improve ponds/lake habitat for recreational fisheries.

Results

1. Bobwhite quail harvest appears to continue to trend downward state wide; the deer harvest appears to be somewhat stable; wild turkey harvest appears to be stable to slightly increasing; and bear harvest, as expected, fluctuates with the availability of hard mast. In 2004 mast production

was down slightly, consequently bear harvest was higher than in 2003.

2. Data to estimate MIS trends remain in transition because the new Regional database is still under construction.
3. There are 11 recreational fishing ponds on the Sumter National Forest consisting of a total of 89 acres. Largemouth bass and bream are the primary fish in the ponds. A few of the ponds have been stocked with grass carp for aquatic plant control and catfish.

Adding wood debris, fertilizer and lime on 20 acres in 2004 on the Enoree and Long Cane Ranger Districts enhanced pond habitat. An additional 25 acres were enhanced on the Strom Thurmond Reservoir on the Long Cane Ranger District.

Findings

Continued effort to establish and maintain woodland and savanna habitats on the Forest is needed. Emphasis should be placed on developing and maintaining escape cover for bear and mast producing hardwood restoration activities need to be incorporated into silvicultural and other projects on the Andrew Pickens Ranger District.

Emphasis needs to be placed on efforts to bring the Regional database into operational use for estimating forest-wide MIS trends.

Habitat enhancement was accomplished in 20 pond acres and 25 reservoir acres on the Enoree and Long Ranger Districts.

Sub-Issue 1.2 – Forest Health

MQ 6: What is the status and trends of forest health threats on the Sumter?

Information

This monitoring question is responsive to goals 7, 15, 16, and 20, objectives 15.01, 17.01 and 20.01, and standards 9F-8 and FW-27. Objective 15.01 is to control non-native invasive plants on a minimum 1,000 acres by the end of the 10-year planning period, emphasizing management prescriptions where biodiversity or restoration is a primary objective. Objective 17.01 is to improve forest health on 10,000 – 50,000 acres of pine forests by reducing stand

density. Objective 20.01 is to maintain condition class 1 by restoring historic fire return intervals and reducing the risk of losing ecosystem components to wildlife on approximately 250,000 acres over the 10-year planning period.

The monitoring elements are defined as follows:

1. Conditions and trends of forest fuels and acres of hazardous fuels treated through wildland fire use, prescribed fire and mechanical treatment.
2. Maintain condition class 1 by restoring historic fire return intervals and reducing the risk of losing ecosystem components to wildfire.
3. Comply with NAAQS air particulate emissions from NF lands [36 CFR 219.27(a)(12)]
4. Improve forest health in pine stands by reducing stand density.
5. Treatments to eliminate or control invasive non-native species. Emphasize treatments of PETS or specific areas. Baseline acres infested with non-native plants by species.

Results

1. A forest health goal for the Sumter National Forest is to prescribe burn 23,600 acres annually. The forest is making significant progress toward meeting the annual burning objective. This trend is expected to continue.
2. Estimates for the amount of condition class 1 lands have been made using existing stand data (Continuous Inventory Stand Condition, CISC). The estimate indicates that approximately 12 per cent is currently in condition class 1. Using the FSM 5140, SUPP. R8-5100-2005-1 monitoring plots and protocol will provide good information for trends of ecosystem components.
3. Prescribed fire emissions on the Sumter National Forest continue to be the most important Forest Service activity impacting air quality, since it releases fine particles into the atmosphere. In FY 2004, the amount of fine particulate matter released into the atmosphere was almost double the FY 2003 levels (Table 2-14). The three fine particulate monitoring sites closest to the Sumter National Forests had increases in both the 24-hour and annual average fine particle concentration in 2004, but the National Ambient Air Quality Standard (NAAQS) was not exceeded.

Table 2-13. Acre burned in the Sumter National Forest.		
CY	2003	2004
Number of Acres	10,105	19,194

Table 2-14. SNF Emissions of Fine Particulates (tons per year)				
FY00	FY01	FY02	FY03	FY 2004
669	669	711	333	633

Table 2-15. Monitoring Results for Particulate Matter 2.5 Microns (PM_{2.5}) and Smaller in Size for the Years 2002 and 2004*

Location/ County	Site ID	2002 24-hour 98 th percentile (ug/m ³)	2002 Annual Average (ug/m ³)	2003 24-hour 98 th percentile (ug/m ³)	2003 Annual Average (ug/m ³)	2004 24-hour 98 th percentile (ug/m ³)	2004 Annual Average (ug/m ³)	3-year Average 24-hour 98 th percentile (ug/m ³)	3-year Average Annual Average (ug/m ³)
Edgefield	450370001	30	12.4	30	12.2	36	13.1	32.0	12.57
Greenwood	450470003	29	13.0	31	12.6	30	13.4	30.0	13.00
Oconee	450730001	26	10.6	29	9.8	23	10.4	26.0	10.27

* 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. Source: <http://www.epa.gov/air/data/geosel.html>

The combustion of fossil fuels and prescribed fires from Forest Service activities also release nitrogen oxides, which can contribute to increases in ground-level ozone. The four ozone monitors within or near the forest had one day or less where the ozone concentrations in 2004 were considered unhealthy for sensitive people. All four of the sites continue to be below the NAAQS for ozone (Table 2-16) in 2004.

Table 2-16. Summary of Ozone Monitoring Data for the National Ambient Air Quality Standard *

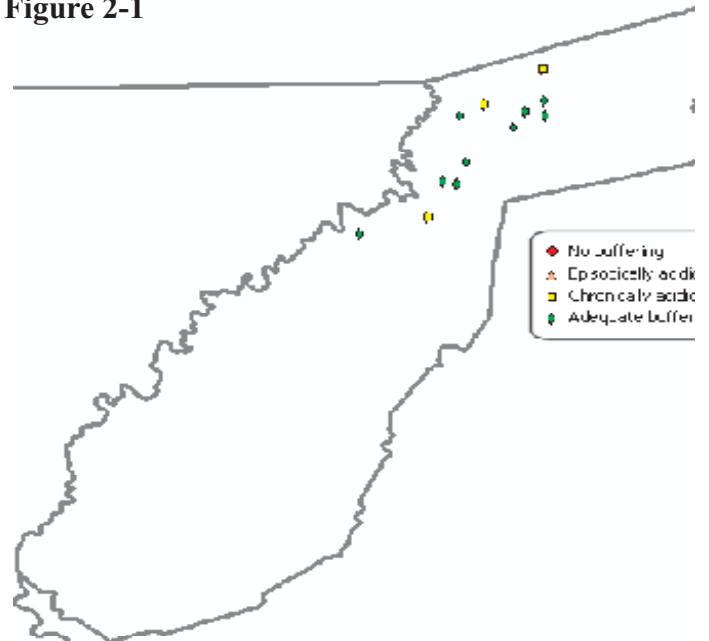
Monitor Location	Year	4th highest 8-hour average	3 Year Average
Abbeville County	2004	0.075	0.080
Edgefield County	2004	0.071	0.078
Oconee County	2004	0.075	0.083
Union County	2004	0.072	0.078

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

In the years 2000, 2002, and 2004, water samples were taken on the Andrew Pickens in the area most sensitive to acid deposition (Figure 2-1). The water samples were titrated to determine the acid neutralizing capacity (ANC). The ANC is a measure of the ability of a stream and watershed to offset sulfur and nitrogen inputs. In particular sulfur deposition is known to remove the beneficial base cations

of calcium, magnesium, and potassium from the soil. Also, if the soil pH drops below 4.5 then a biological toxic form of aluminum is released into the soils for uptake by vegetation, or can be transported to the streams. Most of the titrated ANC values indicated there is adequate buffering capacity to offset any acid inputs into the system, except four sites that had at least one sample with a chronically acid value (Figure 2-1). Streams that have the ANC value drop to chronically acid can have the sensitive aquatic biota be adversely impacted. Native brook trout can be found in streams with ANC values greater than 0 (episodically acid, chronically acid, and adequate buffering capacity categories) and the stream ANC is probably not limiting their distribution on the Sumter.

Figure 2-1



4. 2,699 acres of commercial thinning were offered in FY 2004.
5. The Sumter National Forest treated 319 acres in 2004 for non-native invasive species, including kudzu, Chinese privet, Chinese wisteria, and mimosa. A Forestwide EA and Decision allowing the treatment of up to 2500 acres in non-native plants was completed.

An inventory of acres infested with non-native invasive plants is ongoing. In a summary of FIA (forest inventory and analysis) plot data for the State of South Carolina, Oswalt found that 72 per cent of the plots sampled in the piedmont and mountains combined contained at least one non-native species. Japanese honeysuckle was the most common non-native invasive species (32 per cent) and Chinese privet the second most common (11 per cent).

Results of the one-time Chinese privet control effort on the Long Cane Ranger district showed 74% mortality was achieved. Cover of the Chinese privet averaged 34.2 per cent, 29.2 per cent, and 21.7 per cent in 3 height classes, and was reduced one year after treatment to 0 per cent, 5 per cent, and 10 per cent cover, respectively.

Findings

In CY 2004, the Forest made a significant step toward meeting the planned annual objective of prescribed burning 23,600 acres. In that year the accomplishment was nearly double that of the previous year. Calendar year 2004 was 4,406 acres short of the objective, however. Though meeting burning objectives is increasingly more difficult to accomplish due to urbanization, smoke and other issues, 23,600 acres is an achievable objective. Increasing the number of acres in condition class 1 through the use of fire, non-commercial, and commercial mechanical treatments will be a much slower process.

Fine particles in the atmosphere can reduce visibility, and they also can increase the risk of heart attacks or respiratory problems for people. Ground-level ozone can also have an adverse impact to people's health. The monitoring result for both of these pollutants indicates the air quality on the National Forests does not exceed the NAAQS. It should be noted that sulfates are

the primary type of fine particulate matter measured in rural areas of the eastern United States. Currently, the Environmental Protection Agency is reviewing the fine particulate NAAQS and if they lower the daily NAAQS to 30 ug/m³ or the annual standard to 12 ug/m³ then portions of the Sumter NF in two counties could be designated as non-attainment.

The Sumter is making good progress to achieving objective 17.01.

Non-native plant populations need to be monitored and follow-up treatments applied. A long-term desired condition should be identified for the site, and an integrated management plan developed for achieving that condition.

Sub-Issue 1.3 – Watershed Condition and Riparian

MQ 15: Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?

Information

This monitoring question is responsive to goals 1, 2, 3 and 5 and objectives 1.01, 2.01, and 5.01. Objective 1.01 is to improve soil and water conditions on 1,500 acres through stabilization or rehabilitation of actively eroding areas such as gullies, barren areas abandoned roads or trails, and unstable stream banks over the 10-year planning period. Objective 2.01 is in-stream flows needed to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values will be determined on 50 streams. Objective 5.01 is to improve soil productivity on 8,000 acres of disturbed, low productivity, eroded soils with loblolly and shortleaf pine on the piedmont during the 10-year planning period.

The monitoring elements are defined as follows:

1. Are State BMP and Forest Standards being implemented to protect and maintain soil and water resources?
2. Improve soil and water conditions through stabilization or rehabilitation of actively eroding areas such as gullies, barren areas, abandoned roads or trails, and unstable stream banks.

3. Improve soil productivity on disturbed, low productivity, eroded soils with loblolly and shortleaf pine on the piedmont.
4. The in-stream flows needed to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values will be determined.

Results

1. Timber harvest activities monitor the implementation and effectiveness of erosion control and water quality protection measures by conducting regular field inspections of the activities and a final review of all measures upon sale closure. The inspection forms are included with the other sale documentation collected. During the year, field visits were made to the piedmont units to discuss riparian prescription implementation including BMP. The forest has maintained a strong adherence to and intends to fully implement BMP to limit water quality and other effects on the land. This intent is also formalized in the Forest Plan revision in forest-wide standards FW-1, FW-2 and others that include specific measures that are intended to protect water quality and address associated soil and water conservation issues. An agreement with the SC Forestry Commission has been formalized to conduct BMP checks and determine consistency when requested. The Forestry Commission has also provided group training of forest and technical staff on BMP s in the past. We intend to continue to pursue both the field and office interaction between the state BMP foresters and USFS personnel on the Sumter NF. This agency interaction should become stronger under the forest plan revision.
2. In 2004, a total of 33 acres were treated. This included 11 acres of stabilization with erosion control, 12 acres of site reshaping and restoration, 7 acres in treating off trail uses or abandoned trails and 3 acres of native grass treatments for producing native grasses for erosion control work on gully treatments, trails and other exposed areas. This level of implementation is substantially below the plan level indicated in Objective 1.01 of 1,500 acres over a decade. There continues to areas needing treatment. Off trail horse and ATV trail uses are expanding and causing erosion and other

impacts that will need to be addressed.

3. In 2004, 150 acres fertilization with NFVW funds and 1,582 acres with CWKV funding. All areas were reviewed and/or sampled in the field prior to treatment to be sure that they met the criteria for needing fertilization. The annual treatment amount of soil productivity improvements is higher than normal to reach the planned level of 8,000 acres over a decade. We believe that the average annual treatment may be exceeded at times due to the current trend to treat larger areas within watersheds or analysis areas. At this rate of implementation, it is likely that the objective in the forest plan would need revision in a few years.
4. There were no accomplishments in 2004 toward developing a protocol process to work on reaching objective 2.01. A task sheet was developed and some funding is planned for 2005 to get started on the protocol for determining in-stream flows.

Findings

BMP compliance checks on areas with ground disturbance or streamside management should be more routine with SC Forestry Commission. When possible, the checks should include assistance from the forest soil and water specialists and districts personnel as they evaluate the BMP in the implementation of ground disturbing practices. Special attention should be placed on practices that occur over substantial areas of the landscape or concentrate within drainage areas such as biomass treatments, thinning, RENEW (site conversion), and prescribed burning.

Inventory and document off trail horse, ATV and other ground disturbing uses, and identify areas that need treatment because of impacts to soil productivity and water quality. Since these uses tend to increase in extent and severity if not regularly treated, work toward closing, stabilizing and/or treating illegal trails within a year of their being found.

It has been an extended period since the soil and water improvement program has been revised and reviewed. An informal review will be considered to address issues that have developed over the last few years and the need to be responsive to treatments and funding opportunities associated with projects that occur at landscape or watershed scales.

Attention to water rights and in-stream flow methodologies and determination is needed to be consistent with plan direction in the future. The forest

hydrologist should work with regional and other hydrologists to develop protocol to fit the forest needs. Coordination with outside hydrologists and aquatic specialists may be appropriate. Include awareness and/or technical training where appropriate to forest and district staff.

MQ 16: What are the conditions and trends of riparian area, wetland and floodplain functions and values?

Information

This monitoring question is responsive to goals 3, 4, 8 and 9, objectives 4.01 and 11-Obj-1 and standards 11-1 thru 11-25. Objective 4.01 is to create and maintain dense understory of native vegetation on 1 to 5 percent of the total riparian corridor during the 10-year planning period. Objective 11-Obj-1 is to improve structural diversity and composition within the riparian corridor on 2,000 acres on the piedmont as canebrake habitat restoration.

The monitoring elements are defined as follows:

1. Are management strategies in riparian areas adhering to Forest Plan riparian guidelines? Are conditions in riparian areas or corridors providing for soil conservation, associated habitats and necessary shade and cover for aquatic habitats?
2. Create and maintain a dense understory within riparian corridors that lack such conditions. Improve structural diversity and composition within the riparian corridor on the piedmont.
3. Acres of Riparian area inventoried for condition (i.e., terrestrial habitat, vegetative composition, woody debris recruitment, invasive).

Results

1. Assessment of riparian condition is typically made relative to project analyses, where existing and desired conditions can be addressed. In some instances, riparian areas are removed as a buffer between management activities, riparian and aquatic resources. Occasionally the riparian condition is evaluated and actions initiated to address riparian health, function, etc. Some of these analyses address the presence of unwanted exotic species or a desire to restore certain

types of native species. In many instances on the piedmont, unstable stream types exist from past land management. Treatment needs are too widespread, costly and severe to be considered seriously in most instances. In most instances, maintaining healthy stream vegetation along stream banks and avoiding activities that contribute to bank failure are desired in the interim, as these streams adjust at their own rate toward stability. Treatment measures would be considered if they became practical for the individual circumstances to achieve desired results.

2. No projects were implemented in 2004 to create dense understory within riparian corridors, improve or restore structural diversity and composition within the riparian corridor.
3. No acres of Riparian area were inventoried.

Findings

Forest and district staff are implementing the riparian requirements and guidelines. Several meetings have been held in the field to discuss riparian identification, delineation, functions and values. Continuing integrated interaction and periodic review of field implementation of the riparian guidance and prescription is desired.

An inventory of Riparian areas should be initiated. Emphasis should be placed on developing and maintaining dense understories and improving stand composition and structural diversity in riparian corridors.

Issue 2. Sustainable Multiple Forest and Range Benefits

Sub-Issue 2.1 – Recreational Opportunities

MQ 9: Are high quality, nature-based recreational experiences being provided and what are the trends?

Information

This monitoring question is responsive to goals 22 and 23.

The monitoring element is defined as follows:

1. Results and trends in user satisfaction ratings.

Results

1. National Visitor Use Monitoring was done on the Francis Marion and the Sumter National Forests in 2002. This monitoring estimated visitor use for all activities including recreational facilities and trails. Sampling strategy does not allow separation of the use by forest. A part of this monitoring survey was a visitor satisfaction survey. The sample does not allow for site-specific information but does give generalized information on overall satisfaction with the facilities and services on the forests as a whole.

Visitors' site-specific answers may be colored by a particular condition on a particular day at a particular site. For example, a visitor camping in a developed campground when all the forest personnel are off firefighting and the site has not been cleaned. Perhaps the garbage had not been emptied or the toilets cleaned during their stay, although the site usually receives excellent maintenance. The visitor may have been very unsatisfied with the cleanliness of restrooms.

In addition to how satisfied visitors were with facilities and services they were asked how important that particular facility or service was to the quality of their recreation experience. The importance of these elements to the visitors' recreation experience is then analyzed in relation to their satisfaction. Those elements that were extremely important to a visitor's overall recreation experience and the visitor rated as poor quality are those elements needing most attention by the forest. Those elements that were rated not important to the visitors' recreation experience need the least attention.

Tables 2-17, 2-18, 2-19 summarize visitor satisfaction with the forest facilities and services at day use developed sites (such as picnic areas, boat ramps, rifle ranges, etc), overnight developed sites and general forest areas (this includes all trails). Wilderness satisfaction is reported in Table 2-20. To interpret this information for possible management actions, one must look at both the importance and satisfaction ratings. If visitors rated an element a 1 or 2 they are telling

management that particular element is not very important to the overall quality of their recreation experience. Even if the visitors rated that element as poor or fair, improving this element may not necessarily increase visitor satisfaction because the element was not that important to them. On the other hand, if visitors rated an element as a 5 or 4, they are saying this element is very important to the quality of their recreational experience. If the overall satisfaction with that element is not very good, management action here can increase visitor satisfaction.

Table 2-17. Satisfaction of Francis Marion-Sumter NF's recreation visitors at Developed Day Use sites

Item Name	Item by Percent response By					Mean * Satisfaction Of Visitors (n)	Mean * Importance To Visitors
	Poor	Fair	Average	Good	Very Good		
Scenery	0.0	3.3	8.3	30.0	58.3	4.4 (60)	4.4
Available parking	1.6	3.3	9.8	23.0	62.3	4.4 (61)	4.0
Parking lot condition	0.0	0.0	6.7	26.7	66.7	4.6 (60)	3.8
Cleanliness of restrooms	5.9	0.0	8.8	23.5	61.8	4.4 (34)	4.5
Condition of the natural environment	3.3	5.0	1.7	26.7	63.3	4.4 (60)	4.7
Condition of developed recreation facilities	0.0	5.4	7.1	30.4	57.1	4.4 (56)	4.2
Condition of forest roads	2.6	5.3	5.3	50.0	36.8	4.1 (38)	4.1
Condition of forest trails	0.0	0.0	5.1	25.6	69.2	4.6 (39)	4.4
Availability of information on recreation	6.0	2.0	12.0	20.0	60.0	4.3 (50)	4.0
Feeling of safety	0.0	0.0	3.3	25.0	71.7	4.7 (60)	4.5
Adequacy of signage	1.7	6.8	6.8	25.4	59.3	4.3 (59)	4.2
Helpfulness of employees	0.0	0.0	2.4	11.9	85.7	4.8 (42)	4.3
Interpretive displays, signs, and exhibits	15.4	0.0	46.2	38.5	0.0	3.1 (13)	4.1
Value for fee paid	6.3	0.0	0.0	18.8	75.0	4.6 (16)	4.3

* Scale is: 1= not important 2=somewhat important 3=moderately important 4= important 5 = very important
n= number of responses on which rating is based.
Note: for items where there was insufficient response (less than 10 interviews) the item is not rated.

Table 2-18. Satisfaction of Francis Marion-Sumter NF’s recreation visitors at Developed Overnight sites

Item Name	Item by Percent response By *					Mean ** Satisfaction Of Visitors (n)	Mean ** Importance To Visitors
	P	F	A	G	VG		
Scenery	0.0	4.5	9.1	22.7	63.6	4.5 (22)	4.8
Available parking	4.8	0.0	4.8	38.1	52.4	4.3 (21)	4.5
Parking lot condition	0.0	0.0	10.0	65.0	25.0	4.2 (20)	4.3
Cleanliness of restrooms	5.0	15.0	5.0	25.0	50.0	4.0 (20)	4.7
Condition of the natural environment	0.0	0.0	0.0	61.9	38.1	4.4 (21)	4.5
Condition of developed recreation facilities	6.3	0.0	0.0	68.8	25.0	4.1 (16)	4.6
Condition of forest roads	0.0	4.5	9.1	45.5	40.9	4.2 (22)	4.4
Condition of forest trails	0.0	4.8	14.3	52.4	28.6	4.0 (21)	4.7
Availability of information on recreation	18.2	13.6	13.6	18.2	36.4	3.4 (22)	4.2
Feeling of safety	0.0	4.5	0.0	54.5	40.9	4.3 (22)	4.7
Adequacy of signage	13.6	9.1	13.6	31.8	31.8	3.6 (22)	4.4
Helpfulness of employees	6.3	0.0	12.5	31.3	50.0	4.2 (16)	4.1
Interpretive displays, signs, and exhibits	--	--	--	--	--	--	--
Value for fee paid	0.0	0.0	10.0	45.0	45.0	4.4 (20)	4.6

*Scale is: P = poor F = fair A = average G = good VG = very good

** Scale is: 1= not important 2= somewhat important 3=moderately important 4= important 5 = very important (n) = number of responses upon which this rating is based

Note: for items where there was insufficient response (less than 10 interviews) the item is not rated



Table 2-19. Satisfaction of Francis Marion-Sumter NF's recreation visitors in General Forest Areas

Item Name	Item by Percent response by *					Mean ** Satisfaction Of Visitors (n)	Mean ** Importance To Visitors
	P	F	A	G	VG		
Scenery	0.0	0.0	5.9	25.5	68.6	4.6 (51)	4.7
Available parking	2.0	2.0	7.8	31.4	56.9	4.4 (51)	4.3
Parking lot condition	2.0	2.0	8.2	30.6	57.1	4.4 (49)	4.1
Cleanliness of restrooms	18.2	12.1	21.2	30.3	18.2	3.2 (33)	4.2
Condition of the natural environment	2.0	2.0	6.0	38.0	52.0	4.4 (50)	4.7
Condition of developed recreation facilities	0.0	0.0	12.1	30.3	57.6	4.5 (33)	3.9
Condition of forest roads	4.4	2.2	6.7	40.0	46.7	4.2 (45)	4.0
Condition of forest trails	0.0	0.0	5.0	30.0	65.0	4.6 (40)	4.3
Availability of information on recreation	5.1	7.7	17.9	30.8	38.5	3.9 (39)	4.0
Feeling of safety	2.0	0.0	8.2	24.5	65.3	4.5 (49)	4.3
Adequacy of signage	8.2	2.0	8.2	34.7	46.9	4.1 (49)	4.1
Helpfulness of employees	8.7	0.0	0.0	30.4	60.9	4.3 (23)	4.3
Interpretive displays, signs, and exhibits	5.6	5.6	16.7	72.2	0.0	3.6 (18)	3.7
Value for fee paid	0.0	0.0	4.2	25.0	70.8	4.7 (24)	4.7
*Scale is: P = poor F = fair A = average G = good VG = very good ** Scale is: 1= not important 2= somewhat important 3=moderately important 4= important 5 = very important (n) = number of responses upon which this rating is based Note: for items where there was insufficient response (less than 10 interviews) the item is not rated							

Table 2-20 gives detailed information about how the Wilderness visitors rated various aspects of the area. A general example of how to interpret this information: If the visitors had rated the importance of the adequacy of signage a 5.0 (very important) and they rated their satisfaction with the adequacy of signage a 3.0 (somewhat satisfied) then the forest might be able to increase visitor satisfaction. Perhaps 29 per cent of visitors said the adequacy of signage was poor. The forest could target improving this sector of visitors for increased satisfaction by improving the signage for Wilderness.

Table 2-20. Satisfaction of Francis Marion and Sumter National Forests Wilderness Visitors

Item Name	Item by Percent response by *					Mean ** Satisfaction Of Visitors (n)	Mean ** Importance To Visitors
	P	F	A	G	VG		
Scenery	0.0	0.0	0.0	17.9	82.1	4.8 (39)	4.7
Available parking	5.1	7.7	12.8	46.2	28.2	3.8 (39)	3.7
Parking lot condition	0.0	2.9	14.3	42.9	40.0	4.2 (35)	3.5
Cleanliness of restrooms	10.5	10.5	21.1	26.3	31.6	3.6 (19)	4.2
Condition of the natural environment	0.0	2.6	0.0	23.1	74.4	4.7 (39)	4.9
Condition of developed recreation facilities	0.0	0.0	0.0	47.4	52.6	4.5 (19)	4.0
Condition of forest roads	2.9	5.7	8.6	57.1	25.7	4.0 (35)	4.0
Condition of forest trails	0.0	2.6	7.9	31.6	57.9	4.4 (38)	4.4
Availability of information on recreation	9.4	9.4	18.8	34.4	28.1	3.6 (32)	4.1
Feeling of safety	0.0	0.0	7.7	28.2	64.1	4.6 (39)	4.6
Adequacy of signage	13.5	8.1	16.2	37.8	24.3	3.5 (37)	4.2
Helpfulness of employees	0.0	0.0	0.0	38.5	61.5	4.6 (13)	4.3
Interpretive displays, signs, and exhibits	--	--	--	--	--	--	--
Value for fee paid	--	--	--	--	--	--	--

*Scale is: P = poor F = fair A = average G = good VG = very good

** Scale is: 1= not important 2= somewhat important 3=moderately important 4= important 5 = very important
n= number of responses on which rating is based.

Note: for items where there was insufficient response (less than 10 interviews) the item is not rated

Results of the above information show that for developed day use visitors were most satisfied with the scenery, the condition of the parking lots, the condition of the natural environment, the conditions of the forest trails, the feeling of safety, the helpfulness of the employees and the value for the fee paid. Visitors were less satisfied with the interpretive displays, signs and exhibits.

Results show that for overnight sites visitors were most satisfied with the scenery, the condition of the natural environment, the conditions of the recreation facilities, roads and trails, the feeling of safety and the value for the fee paid. Visitors were less satisfied with the cleanliness of the bathrooms, the availability of recreation information and the adequacy of the signage.

Results show that for general forest areas (including trails, etc) visitors were most satisfied with scenery, available parking, parking lot condition, condition of the natural environment, conditions of the recreation facilities, roads and trails, the feeling of safety, the helpfulness of the employees and the

value for the fees paid. They were less satisfied with the cleanliness of the restrooms, the availability of information on recreation and the interpretive displays, signs and exhibits.

Results show that for wilderness visitors they were most satisfied with scenery, condition of the natural environment, conditions of the recreation facilities, the feeling of safety, the helpfulness of the employees. They were less satisfied with the cleanliness of the restrooms, the availability of information on recreation and the interpretive displays, signs and exhibits.

Findings

All visitors were less satisfied with the same things, with the cleanliness of the restrooms, the availability of information on recreation and the interpretive displays, signs and exhibits. Interim monitoring of satisfaction through surveys or other methods could also be employed as funds become available.

No trend information is available at this time. In 2007, NVUM will be redone, approximately every 5

years. At that time there will begin to be enough information to develop trend information.

MQ 10: What are the status and trends of recreational use impacts on the environment?

Information

This monitoring question is responsive to goals 1, 3, 4, 5, 22, and 23, desired condition for management prescription 11 and standards FW-2, FW-10, FW-11, FW-14, FW-70, FW-76, and FW-77.

The monitoring elements are defined as follows:

1. Recreation activities contribution to the degradation of riparian areas or adversely affecting water quality.
2. Impacts associated with OHV activities.
3. Are motorized and nonmotorized trails being maintained.

Results

1. No monitoring of recreation activities' effects on riparian areas or water quality was done in 2004, other than during routine maintenance. A monitoring strategy was developed in 2005 for that purpose. This strategy prioritizes the recreation sites and activities and proposes to monitor the most impacted ones the most often. This will include the three OHV trails on the Forest. Other monitoring will be done annually. The majority of the recreation sites and activities will be every five years in conjunction with the required condition surveys.
2. In 2004, a resource closure was implemented which allows trails managers to close OHV trails quickly to respond to weather conditions. Trails that are saturated with water can quickly become damaged if OHV are allowed to use the trail too soon after rains. This, along with the yearly closure (January through March), has generally improved the conditions of the OHV trails, despite the extremely wet weather conditions associated with the 2004 hurricane season.
3. Te maintenance of trail, both motorized and non-motorized, is ongoing throughout the year. Although backlog trail maintenance was

reduced during the first part of the fiscal year, a series of hurricanes affecting both the coast and the mountains erased any gains that were made during the year and slightly increased the backlog.

Findings

A monitoring strategy for all recreation sites and trails has been developed and results will be reported in 2005 monitoring report.

MQ 13: Are the scenery and recreational settings changing and why?

Information

This monitoring question is responsive to goals 13, 28 and 30 and objective 23.02. Objective 23.02 states in the piedmont, increase acreage that is at least ½ mile from an open road to 35,000 acres, emphasizing land blocks that are at least 2,500 contiguous acres in size.

The monitoring elements are defined as follows:

1. Acres of National Forest land that meet or exceed established scenic quality objectives (SIO) and recreation opportunity spectrum (ROS) objectives.

Results

1. Project and field review of ground disturbing activities were ongoing in 2004. Proposed projects on the Sumter National Forest met the established SIO standards and ROS objectives. We will monitor project implementation from 2005 through 2008 to validate the findings of that analysis
Acreage that is at least ½ mile from an open road on the piedmont has not been measured in past monitoring. No information was collected for FY 2004.

Findings

The next update of this information will occur in FY 2005. No additional actions are required.

Sub-Issue 2.2 – Roadless Areas/ Wilderness/Wild and Scenic Rivers

MQ 11: What are the status and trend of wilderness character?

Information

This monitoring question is responsive to goals 26 and 27.

The monitoring element is defined as follows:

1. Is visitor use within limits that do not impair the wilderness characteristics?

Results

1. We currently do not have a systematic monitoring of wilderness use and its impacts to the wilderness character. Nationally, a framework is being developed which will include data collection procedure, storage, analysis, and reporting. We anticipate monitoring with the framework in the winter of 2006.

Field observation tells us that Ellicott Rock Wilderness use is concentrated in areas around and adjacent to the trail system and the Chattooga Wild and Scenic River. There are areas, especially camping along the trail, that are impairing wilderness characteristics.

Findings

Rehabilitate known impacted camping areas along the trails.

MQ 12: What are the status and trend of Wild and Scenic River conditions?

Information

This monitoring question is responsive to goals 1, 28 and 29 as well as compliance with the Wild and Scenic Rivers Act, Clean Water Act and South Carolina Water Quality Standards.

The monitoring elements are defined as follows:

1. Are free-flowing conditions and outstandingly remarkable values being protected for eligible and designated rivers.
2. Are water quality standards being met for eligible and designated rivers.

Results

1. Projects on the eligible and designated rivers are evaluated during the environmental analysis. Several projects were reviewed during 2004. All project proposals protected the outstandingly remarkable values and free-flowing conditions of the rivers. We will monitor project implementation from 2005 through 2008 to validate the findings of that analysis.

The Chattooga River annual use is available through 2004. Total boating use for the river for 2004 was approximately 64,000. The self-guided use was over the daily thresholds on Section IV on 4 weekday and 6 weekend days between April and August. The self-guided use on Section III was not over the daily limits. This information does not indicate any change is needed on the self-guided use limits.

2. The forest plan and past monitoring have identified issues of elevated fecal coliform beyond standard levels in the lower portions of the Chattooga River, below Stekoa Creek. Substantial data exists that the primary sources of both sediment and fecal coliform pollutants reside within the Stekoa Creek subwatershed. In addition, many other streams on the Sumter NF have intermittent to chronic problems with excessive fecal coliform levels and fine sediments. In infrequent instances, occurrences of other pollutants are also present in the data reported by the SC Department of Health and Environmental Control. Some of these problems can be expected due to the amount of urbanization, development and other activities that is occurring across the State, including areas that contribute to streams on the National Forest. Added monitoring may be in order where NF activities may contribute as a source of pollution to impaired stream sections.

Findings

In general, forest management activities are not major pollution sources that impact water quality, but in

some instances, they could contribute to existing problems that are already above threshold levels or listed as impaired streams. The forest and districts will continue to estimate and evaluate proposals for their impact to water quality. Conditions where added measures of control or monitoring are justified, they will continue to be included in the proposal as a condition of treatment or as mitigation.

Sub-Issue 2.3 – Heritage Resources

MQ 14: Are heritage sites protected?

Information

This monitoring question is responsive to goal 31. The forest manages areas with special paleontological, cultural, or heritage characteristics to maintain or restore those characteristics

The monitoring element is defined as follows:

1. Effectiveness of heritage protection measures.

Results

1. The Forest Service monitors heritage sites to determine if Goal 31 of the Sumter National Forest Land and Resource Management Plan is being met. Heritage sites at risk are monitored in accordance with general preservation plans, site specific plans, and other treatments specified by agreements. Heritage Preservation Plans (HPP) are developed and implemented, either by individual site or by heritage resource type for at risk property categories. HPPs are developed to protect those qualities and values that contribute to the property’s significance. Prehistoric and historic artifacts, investigation filed records, historic archival data including photographs, maps, and information sources are maintained to national curatorial and/or archival standards. Archaeological Resource Protection Act (ARPA) investigations are completed at properties that have been damaged by illegal activities.

The results of site monitoring are presented in Table 2-21..

Table 2-21. Archaeological Sites	
Total number of sites monitored	25
ARPA investigations	1
Other vandalism (metal detector holes)	1
Sites eroding by water	3
Sites damaged by forest users	2
Sites damaged by wildfire	2
Sites undisturbed	16

The forest has not developed Heritage Preservation Plans for most sites and at risk sites are not monitored on a regular schedule. Over 500 sites are eligible or possibly eligible for the National Register of Historic Places and are in need of HPPs. Current monitoring targets more visible sites with a known history of vandalism or other damage. Vandals and artifact collectors continue to use metal detectors to search historic sites and remove artifacts. Prehistoric soapstone quarry site 38OC48 on the Andrew Pickens Ranger District was vandalized twice this year and several soapstone bowl performs were probably removed. Prehistoric sites 38OC423 and 38MC509 were damaged by firelines bulldozed during wildfires. Several sites are being damaged by water erosion along the shoreline of the Strom Thurmond Lake on the Long Cane Ranger District. Unauthorized wood roads, ATV, horseback riding and bike trails are causing erosion and disturbance on sites. Plowing of wildlife fields is damaging some sites and exposing artifacts for illegal collection. Eight fire lookout towers are historic sites in need of repair, restoration and documentation. Current curatorial and archival methods do not meet national standards for artifact collections, archives, photographs and associated materials.

Findings

The forest needs to develop Heritage Preservation Plans for at-risk sites and implement regularly scheduled monitoring. Plowed wildlife openings should be inventoried for heritage resources and any significant sites found protected. A Forest Heritage Curation Plan should be developed to assess curatorial needs. The effects on archeological sites due to dispersed recreation should be assessed.

Issue 3. Organizational Effectiveness

MQ 17: How do actual outputs and services compare with projected?

Information

This monitoring question is responsive to goals 14, 18, 34 and 35, objective 10B-OBJ-1 and standard FW-96. Objective 10B-OBJ-1 states provide local economies with 4.7 – 7.4 MMCF of wood products annually.

The monitoring elements are defined as follows:

1. Emphasize high quality forest products on the piedmont.
2. Are roads being maintained, constructed or reconstructed to reduce sediment delivery to water bodies and to provide a transportation system that supplies safe and efficient access for forest users while protecting forest resources.
3. Determine the costs of doing management.
4. Estimate the returns to counties.

Results

1. The Sumter NF offered 1.3 MMCF of forest

Activity	FY 2004	10 Year Plan Estimate
Road Construction	0.0	9.0
Road Reconstruction	12.5	342.0
Timber Roads	16.3	N/A
Roads Decommissioned	5.2	0.0
System Mileage	1047	N/A
Roads Maintained	831	8450

3. The budget allocation includes both the Sumter and Francis Marion National Forests and cannot be tracked separately. Annual Budget expenditures are adjusted for inflation and do not include any dollars allocated for grants and other specific programs. The annual budget for FY 2004 was \$13.6 MM.

products for sale in management prescription 10B in FY 2004. Total Sumter offer (all management prescriptions) in FY 2004 was 4.7 MMCF.

2. The roads constructed, reconstructed and maintained are shown in the Table 2-22.
4. In 2000, Congress passed legislation to make up for the reduction in timber sales. The Secure Rural Schools and Community Self-Determination Act gave local communities a choice. All 13 affected counties chose to receive the full payment option. The 11 counties in the Sumter National Forest and the payments are displayed in Table 2-23.

Table 2-23. Returns to counties

County	FY2004 Full Payment
Abbeville	\$146,655
Chester	\$78,300
Edgefield	\$195,855
Fairfield	\$70,030
Greenwood	\$67,623
Laurens	\$132,419
McCormick	\$310,373
Newberry	\$357,898
Oconee	\$505,495
Saluda	\$27,635
Union	\$378,938

Findings

Most of the timber offer in FY 2004 was in management prescriptions other than 10B. Budgets and personnel are a limiting factor in providing timber offer. NEPA process compliance and costs are also a factor.

The road program continued to emphasize the reconstruction of roads to meet the intended traffic volumes safely and lessen the impacts to the forest. Utilizing the Forest Service road construction, maintenance, and reconstruction standards, current Best Management Practices, and technical assistance from other resource experts, road designs emphasized mitigating negative impacts to resources with the focus on watershed health. Road projects for timber harvesting activities were mainly for resurfacing and

culvert replacement. No new roads were constructed in FY 2004.

The forest continued to conduct road condition surveys in FY 2004 to access the backlog of deferred maintenance. The current updated survey identified \$23,246,091 dollars of maintenance needed on the on the 1047 miles of road on the Sumter National Forest.

Road mileage is expected to continue to slowly decrease as road decommissioning mileage has been more than the new roads acquired through land acquisitions.

MQ 18: Are silvicultural requirements of the Forest Plan being met?

Information

This monitoring question is responsive to goals 14 and 18.

The monitoring elements are defined as follows:

1. Are lands being adequately restocked within 5 years of regeneration treatments.

Results

1. A review of the 2004 PEP report shows that almost all plantations far exceed requirements. A few isolated stands had survival less than the standard, but these only included planted trees. Most stands are now regenerated by natural regeneration (seed trees vs planted seedlings). These stands typically have regeneration far in excess of minimum numbers.

Findings

No additional action is needed.

MQ 19: Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?

Information

This monitoring question is responsive to desired conditions, goals, objectives and standards in the plan.

The monitoring elements are defined as follows:

1. Are projects being managed according to requirements and making progress toward achievement of DFC for vegetation?
2. Management of newly acquired lands.

Results

1. No Integrated Resource Reviews (IRR) were completed this year.
2. The Forest acquired 84 acres.

Findings

For FY 2005 an IRR is scheduled on the Andrew Pickens district.

Chapter 3. FY 2005, 2006, and 2007 Action Plan and Status

Actions Not Requiring Forest Plan Amendment or Revision

a) Action: Baseline acreage, condition and distribution of rare communities on the Forest.

Responsibility: Forest biologists

Date: FY 2006

Status: Needs to be reported every five years.

b) Action: Gap creation and forest stand composition changes need to be integrated into silvicultural and other projects.

Responsibility: Forest biologists, Forest silviculturist

Date: FY 2006

Status: No projects were implemented in 2004 to create gaps.

c) Action: Emphasis needs to be placed on efforts to bring the Regional database into operational use for estimating forest-wide MIS trends.

Responsibility: Forest biologists

Date: FY 2006

Status: Data to estimate MIS trends remains in transition as the new Regional database is still under construction.

d) Action: Wetland habitat development and hardwood restoration activities need to be incorporated into silvicultural and other projects on the forest.

Responsibility: Forest biologists

Date: FY 2006

Status: No projects were implemented in FY2004 to create wetland habitats, improve or restore mast producing hardwood stands, or alter major forest community or conditions.

e) Action: Establish and maintain woodland and savanna habitats on the Forest.

Responsibility: Forest biologists, Districts

Date: FY 2006

Status: In FY 2004, the acres of woodland and savanna conditions, 414 acres, remains unchanged. This compares to Objective 8.02 which provides 8,000 – 11,000 acres of woodlands in the piedmont and 4,000 – 5,000 acres of woodlands in the mountains.

f) Action: Non-native populations need to be monitored and follow-up treatments applied. A long-term desired condition should be identified for the site, and an integrated management plan developed for achieving that condition.

Responsibility: Forest biologists

Date: FY 2006

Status: An inventory of acres infested with non-native invasive plants is ongoing.

g) Action: Inventory and document off trail horse, ATV and other ground disturbing uses, and identify areas that need treatment because of impacts to soil productivity and water quality.

Responsibility: Forest recreation specialist, soil scientist, hydrologist, Districts

Date: FY 2006

Status: Presently working on a demand/supply study related to equestrian use.

h) Action: An inventory of Riparian areas should be initiated. Emphasis should be placed on developing and maintaining dense understories and improving stand composition and structural diversity in riparian corridors.

Responsibility: Forest Biologist, Forest Hydrologist

Date: FY 2006

Status: No acres of riparian areas were inventoried.

i) Action: NVUM needs to redone every 5 years.

Responsibility: Forest Landscape Arch.

Date: FY07

Status: Last inventory completed in FY 2002.

j) Action: The results from a monitoring strategy for all recreation sites and trails needs to be reported.

Responsibility: Forest Recreation Specialist

Date: FY 2005

Status: Results have not been reported yet.

k) Action: The Forest needs to develop Heritage Preservation Plans for at risk sites and implement regularly scheduled monitoring.

Responsibility: Forest Archeologist

Date: FY 2006

Status: The forest has not developed Heritage Preservation Plans for most sites and at risk sites are not monitored on a regular basis.

l) Action: The effects on archeological sites due to dispersed recreation needs to be addressed.

Responsibility: Forest Archeologist, Forest Recreation Specialist

Date: FY 2006

Status: Unauthorized wood roads, ATV, horseback riding and bike trails are causing erosion and disturbance on sites.

m) Action: An Integrated Resource Review (IRR) needs to be completed on the Andrew Pickens District.

Responsibility: Forest Planner

Date: FY 2005

Status: A draft report has been written.

n) Action: A new monitoring element of management of newly acquired lands needs to added.

Responsibility: Forest Planner

Date: FY 2005

Status: The Forest has acquired 84 acres.

o) Action: Inventories of benthic macroinvertebrate, crayfish and mollusk communities need to be accomplished.

Responsibility: Districts and SO.

Date: FY 2005 and FY 2006

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

p) Action: The monitoring element related to trends in the composition and abundance of impoundment fish communities needs to be deleted.

Responsibility: SO

Date: FY 2005

Status: Replaced by monitoring element to maintain or improve ponds/lake habitat for recreational fisheries.

Actions Which Do Require Forest Plan Amendment or Revision

a) Action: Prepare a Forest Plan Amendment to respond to the April 28, 2005 Appeal Decision reversing the Regional Forester’s decision to continue to exclude boating on the Chattooga Wild and Scenic River above Highway 28. In the interim management of boating above Highway 28 will revert to the direction in the 1985 Forest Plan, and the closure decision made in that plan will remain in effect.

Responsibility: SO planning and resource staffs

Date: FY07

Appendix A - List of Preparers

The following individuals contributed to this report:

Jim Bates	Forest Archaeologist
Bill Hansen	Forest Hydrologist
Ed Hedgecock	Forest Engineer
John Cleeves	Forest Planner
Dennis Law	Forest Soil Scientist
Robert Morgan	Forest Archaeologist
Gary Peters	Forest Wildlife Program Manager
Robin Mackie	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
Charlie Kerr	Fire/Aviation Management Officer
Eric Schmeckpeper	GIS Specialist
Bill Jackson	Air Resource Specialist
Jeanne Riley	Fisheries Program Manager

Appendix B - Amendments to Forest Plan

Since the Sumter Plan was revised on January 2004 no amendments have been completed.

Appendix C – Summary of Research Findings and Research Needs

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

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

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

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

Appendix D-

References

Eversole, A. G. and Jones, D.R. 2004 Key to the crayfish of South Carolina. Clemson University, Clemson, SC 43 pp.

Warren, M.L, B.M Burr, S.J. Walsh, H.L Bart, R.C. Cashner, D.A. Etnier, B.J. Freeman, B.R. Kuhajda, R.L. Mayden, H.W. Robison, S.T. Ross and W.C. Starnes. 2000. Diversity, distribution, and conservation status of the native freshwater fishes of the Southern United States. *Fisheries* 25(10):7-29.

Dolloff, C. A., D. G. Hankin, and G. H. Reeves. 1993. Basinwide estimation of habitat and fish populations in streams. General Technical Report SE-83. Asheville, North Carolina: U.S. Department of Agriculture, Southeastern Forest Experimental Station.

SUMTER NATIONAL FOREST
FISCAL YEAR 2004 MONITORING AND EVALUATION ANNUAL
REPORT

COMMENT FORM

If you have any comments on this report, please fill out this form, fold and staple with USDA Forest Service address outside, add postage and drop in the mail. Please include your name and address at the bottom of this form.

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

Name: _____

Address: _____
