

**2007**

**Monitoring and Evaluation Annual  
Report**

**Revised Land and Resource Management  
Plan**

**Sumter National Forest**

**September, 2008**



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## Forest Supervisor's Certification

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

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

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

/s/ Jerome Thomas  
JEROME THOMAS  
Forest Supervisor

September 25, 2008  
Date

## **Executive Summary of Monitoring and Evaluation Results and Report Findings**

The *Revised Land and Resource Management Plan* (Forest Plan) provides guidance on how the Sumter National Forest will be managed. Monitoring is used to assess how well goals and objectives are being met, if standards and guidelines are being properly implemented, and whether environmental effects are occurring as predicted.

Summary of Key Results and Findings:

### **Ecosystem Condition, Health and Sustainability**

A number of vegetative management projects are in the implementation stage on the Andrew Pickens Ranger District to remove non-native loblolly pine that was planted in the 1960's and 1970's. A number of areas will be planted to native shortleaf pine. A little over 2,000 acres of woodland habitat will be established over the next several years on all three ranger districts.

Silvicultural prescriptions generally emphasize release of desirable oaks and hickories when present in stands scheduled for harvest. Approximately 1,757 acres were commercially thinned and 209 acres precommercially thinned on the Enoree and Long Cane Ranger Districts.

Maintenance and repair work was completed on the Tyger Waterfowl Area on the Enoree Ranger District. Work consisted of placing boulders to prevent illegal vehicle use, repairing the access road, removing hazard trees, installing a new screw gate, drain pipe, and adding new wildlife food plots. The spillway is scheduled to be repaired in FY 2008.

Aquatic insect surveys were conducted in the Chattooga River watershed in October 2007 and the results will be available in 2009.

A large woody debris survey was conducted on the main stem of the Chattooga River from Highway 28 and upstream into the headwaters. The survey was also conducted on the West Fork Chattooga River, Overflow Creek, and Holcomb Creek. The smallest size class (size 1) comprised nearly half of the total woody debris load in the streams. The highest amounts of the larger diameter size classes (sizes 2 and 4) were found in the West Fork and upper Chattooga River, but overall these size classes were rare. Also, the largest size class of large woody debris (size 4) was less than two percent of total large woody debris in each stream. Larger diameter wood promotes aquatic habitat stability and organic matter retention over a longer period of time. Although total large woody debris loads were near to or greater than the desired condition of 200 pieces per mile, several reaches contained lower amounts of large woody debris.

Stream fish inventory and monitoring surveys were conducted at 12 sites in eight streams on the Andrew Pickens Ranger District. A total of 24 species were captured in both cool and cold water habitats.

Brook trout were utilizing large woody debris on 2.5 miles of King Creek following habitat improvement work that was completed in 2005 and 2006.

The federally threatened Florida (Miccosukee) gooseberry population on the Long Cane Ranger District was monitored. One large new colony was evaluated. The incidence of fruit production was low and could be associated with the extended drought which has occurred in South Carolina, from August 1998 to April 2003, and then again in 2007. Some competition from non-native invasive plant species (Japanese honeysuckle and Chinese privet) was observed, but did not appear to be an overriding factor affecting population size and reproductive capacity. Monitoring conducted since 1994 suggest that the population is stable.

Eastern wild turkey reproduction has been poor the last three years with 2007 being the worst. This is likely due to a combination of factors including extended drought conditions that lead to limited availability of seeds and insects. Also, there may likely be declines in habitat statewide as a result of increases in pine plantations greater than ten years old which do not provide high quality habitat for turkeys.

Deer harvest estimates continue to be relatively stable, and black bear populations are increasing in the mountains [South Carolina Department of Natural Resources (SCDNR) estimates there are up to 900 bears in the mountains of South Carolina]. Black bear habitat has tripled in the mountains.

SCDNR survey cooperators flushed an average of 0.59 bobwhite quail coveys per hour during the 2006-07 season, significantly higher than the flush rate in the previous season. Quail bagged per hour remained the same, and the reported average covey size was significantly higher than the previous year.

There are 11 recreational fishing ponds totaling 89 acres on the Sumter National Forest. Habitat improvement occurred on 35 acres of ponds and 75 acres of Strom Thurmond Reservoir on the Long Cane Ranger District.

The Long Cane and Enoree Ranger Districts have decisions in place for both dormant and growing season prescribed burning. In 2007, 26,276 acres were prescribed burned on the Sumter, an increase from the 2006 total of 21,788 acres. The number of acres in condition class 1 is increasing because of increased prescribed fire use in conjunction with non-commercial and commercial mechanical treatments of forest stands. Stewardship contracts and timber sales are providing more opportunities for treating fuels than existed a few years ago.

The amount of fine particulate matter (PM<sub>2.5</sub>) released into the atmosphere by prescribed fire in 2007 was greater than the previous year, reflecting the increase in acres treated. The four monitoring sites closest to the forest recorded increases in 24-hour fine particulate concentrations from 2005 and 2006 levels, and annual average concentrations were lower than previous years. These results indicate that even with increased emissions from prescribed fire, the 24-hour NAAQS for fine particulates was not exceeded. However, the annual average fine particulate concentrations near Augusta, GA (Richmond County monitoring site) do exceed the NAAQS. Currently, there is no evidence that the emissions from prescribed fires are a significant contributor to the annual average fine particulate concentrations in Richmond County.

In September 2006, the Environmental Protection Agency lowered the daily PM<sub>2.5</sub> NAAQS from 65 to 35 ug/m<sup>3</sup>. The annual standard remains the same at 15 ug/m<sup>3</sup>. EPA will issue the final

nonattainment designations in November 2009, and the new nonattainment designations will be effective April 2010. It appears that most monitoring stations around the Sumter National Forest will remain in attainment of the PM2.5 standards, except the one at Richmond County, GA.

In March 2008, the Environmental Protection Agency lowered the ozone standard from 0.08 parts per million (ppm) to 0.075 ppm. Ozone monitoring results collected from counties intersecting the Sumter indicate that air quality is above the NAAQS in the counties of Abbeville, Chester, and Union. If high 8-hour averages continue, then there is a possibility the Environmental Protection Agency could designate the three counties as nonattainment in the year 2009. This will require the State of South Carolina to develop a plan for conformity to the new air standards. The forest has developed an action item to work with the State of South Carolina to supply information relative to prescribed burning on the forest in order to help the State meet air quality standards.

The Enoree and Long Cane Ranger Districts have decisions in place that will create additional early successional habitat through regeneration harvest over the next five years. The Sumter National Forest sold 10,080 acres of commercial thinning from FY 2004 through FY 2007.

The Sumter National Forest treated 700 acres of non-native invasive plant species (NNIS) including Johnson grass, kudzu, Chinese privet, Chinese wisteria, and autumn olive. Since 2004, non-native invasive plants have been treated on approximately 1,750 acres. Of these acres treated and monitored in 2007, 25% had infestations which were at very low levels (<1% cover). This was within the desired condition for these areas.

Inventories were conducted for NNIS plants in portions of the Chattooga Wild and Scenic River corridor in early 2007, and some areas were treated. Chinese silvergrass (*Miscanthus sinensis*), a fast spreading grass on the Regional Forester's NNIS list, was found along Burrell's Ford Road, the entrance to the campground parking lot to the river, and along the gated road to Burrell's Ford campground. It was also found along SC107 from Cherry Hill campground to Burrell's Ford Road and between Cherry Hill campground and Winding Stairs Road. It is spreading along the Chattooga River. High infestations of autumn olive and Chinese privet were identified and treated at Russell Fields. High infestations of Chinese privet and English ivy were identified and treated at the Highway 28 boat landing, and autumn olive and Chinese Privet were identified and treated along Low Water Bridge Road.

A total of 205 acres of severely eroded, low site lands in poor watershed condition were fertilized using soil and water and regional KV improvement funding. All treated 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 on track and close to the planned level of 8,000 acres over a decade.

An Equestrian Analysis of the Francis Marion and Sumter National Forest was conducted in FY 2006 by Price Waterhouse Coopers (PwC), as well as an inventory of user-created horse trails. In FY 2007, the information contained in the PwC inventory was used to begin developing an equestrian strategy for the forest. One preliminary action item was the development of a proposal for rehabilitating facilities and improving services at the Whetstone Horse Camp on the

Andrew Pickens Ranger District. This project is slated for design in FY 2008 and implementation in FY 2009.

An analysis of the Oscar Wigington National Forest Scenic Byway on the Andrew Pickens Ranger District was conducted in FY 2007 by the Landscape Architect Department at Clemson University. The report entitled "*The Oscar Wigington Scenic Byway Management Guide*" includes several inventories, including nature-based recreational opportunities. It also proposes a vision and goals along with a phased-in action plan for the Scenic Byway. The report will be used in FY 2008 to support the development of a State Scenic Byway nomination proposal as well as help with the development of a corridor management plan that will include action items designed to improve nature based recreation experiences along the road.

A review of the two OHV Trails on the Long Cane Ranger District was conducted by the "Trails Unlimited" Enterprise Team. The overall purpose of the review was to assess the condition of the Cedar Springs and Parson's Mountain OHV Trails (approximately 22 miles). The findings of the review concluded that:

- Approximately 25% of the trail mileage appears to be in good condition.
- A small percentage of the trail mileage (5% or less) should be considered for relocation.
- The remaining trail mileage (approximately 70%) could be brought to a higher standard by simply changing the maintenance techniques currently used.

More detailed information on the OHV Trails Review of the Long Cane Ranger District is available in the "*Cedar Springs and Parsons Mountain OHV Trail Report*" (USDA Forest Service Trails Unlimited Enterprise Team, 2007).

A biophysical inventory of the Chattooga Wild and Scenic River corridor and the Ellicott Rock Wilderness was conducted as a part of the Chattooga River Carrying Capacity Analysis. The following are conclusions from the inventory:

- There are biophysical impacts from trails and campsites on the Upper Chattooga from current uses. Unacceptable impacts can probably be addressed with trail and site design, rehabilitation projects, and more regular clean-up.
- Many biophysical impacts are related to pioneering users, so potential "new" uses such as boating deserve attention and monitoring.
- Many biophysical impacts are addressed with "technical fixes" (site hardening or changes that direct use to non-sensitive or more durable areas) or education/regulation (encouraging people to adopt better "low impact" practices).

Increased emphasis on trail maintenance across the Sumter is paying off, especially with regards to OHV and equestrian trails. Many trails are in the best condition they have ever been in. Grant

funds have been used extensively to help meet the maintenance needs along with the fee dollars generated at the facilities themselves.

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

Total timber offered for sale in FY 07 (all management prescriptions) was 7.1 million cubic feet (MMCF), up from 6.0 MMCF in FY 06. Timber offered in 10B-High Quality Forest Products (Piedmont Only) represented a little over half of the volume offered or about 3.7 MMCF.

Approximately 754 miles of system roads were maintained, 0.2 miles were constructed, 3.2 miles were reconstructed, and no roads were decommissioned. Road work was completed from appropriated and timber funding. The total miles of system road remained steady at 1,062 miles, though increases are likely in the future as new land purchases are made.

The forest continued to assess the backlog of deferred maintenance needs with the focus on open roads classified as maintenance level (ML) 3, ML 4, and ML 5. An identification of roads that could be changed from ML 3 to ML 2 began in FY 2007, and this will help reduce road maintenance costs in the future. Deferred maintenance is currently estimated at \$22,461,000.

Roads maintained/reconstructed with funding from timber increased from 28.1 miles in FY 2006 to 37 miles in FY 2007 with increased timber harvest activity.

Land purchases totaled about 432 acres on the Long Cane Ranger District during this fiscal year.

## **Chapter 1. Introduction**

The Sumter National Forest is 365,134 acres in size and is located in the central piedmont and western mountains of South Carolina. It is composed of three districts: Andrew Pickens (AP), Enoree (EN), and Long Cane (LC). The *Revised Land and Resource Management Plan, Sumter National Forest* (Forest Plan), approved on January 15, 2004, guides management activities on the forest. These lands are managed to provide goods and services for timber, outdoor recreation, water, wildlife, fish, and wilderness following multiple-use goals and objectives.

Forest Plan monitoring and evaluation is conducted to determine if the forest is moving toward or achieving the desired conditions for resources. Forest Service resource specialists, universities, state resource agencies and contract specialists conduct surveys and inventories on a variety of natural resources annually.

## **Chapter 2. Monitoring Results and Findings**

### **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 one to five percent of the riparian corridor on slopes less than eight percent in the canebrake community over the 10-year planning period in the Piedmont. 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. Little new information on condition of rare communities was collected in FY07. Dr. Charlie Horn identified basic mesic communities in eight stands occurring adjacent to the Pittman Project area on the Enoree Ranger District.
2. The Enoree River bluff basic mesic plant community received an intense prescribed burn and will be monitored to determine effects. The rare post oak savanna community on the Long Cane Ranger District is in decline in the absence of frequent prescribed fire. No canebrake or table mountain pine restoration was conducted in 2007. Fifty acres of autumn olive were treated in the Johns/Dry Creek rare community prescription on the Long Cane Ranger District.

##### Findings

1. There is a need to identify rare communities that occur in or adjacent to project areas if there is a potential that they may be affected.
2. Non-native invasive plants continue to threaten rare communities (including canebrakes) along riparian corridors on the piedmont. Monitoring and treatment of non-native invasive plants in rare communities should continue to be a priority.
3. More effort is needed on the piedmont to identify existing high quality canebrakes suitable for restoration. No projects were implemented on the Andrew Pickens Ranger District in 2007 for restoring table mountain pine communities.

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 in 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 forest 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 - 10,000 acres 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 one to five percent 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 designed to release mast producing species, particularly hard mast (e.g., oak, hickory, walnut) and soft mast bearing trees (e.g. cherry, black gum, persimmon) over the 10-year planning period.

Objective 8.06 is to restore more diverse native communities on 1,000 - 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 forest on the Andrew Pickens Ranger District.
2. Prefer rare communities on dry-xeric sites in the piedmont and mountains.
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 one to five percent of closed canopy mid and late-successional mesic deciduous forests.
7. What are the trends in MIS population indices in relationship to major forest community/conditions? Frequency of occurrence trends for hooded warbler, scarlet tanager, pine warbler, Acadian flycatcher, and brown-headed nuthatch.

Results

1. The Chauga loblolly project and a portion of the Cedar Creek project have removed non-native loblolly pine trees. The Ross Mountain/Tamassee project is another loblolly pine removal project that will treat another 307 acres of loblolly pine plantations. Also in the planning stages is a district-wide loblolly pine removal project.
2. Existing and planned woodland habitat are summarized in Table 2.1.

**Table 2.1 Woodland Habitat Projects**

<b>Ranger District</b>	<b>Acres</b>	<b>Project Name</b>
Andrew Pickens	360	Garland Tract
Long Cane	54	Post Oak Savanna
Andrew Pickens	207	Cedar Creek Project
Enoree	447	Lower Enoree/Indian Creek
Long Cane	964	Renew Project
<b>Total</b>	<b>2,032</b>	

Though this acreage is significant, it is much less than the plan objective.

3. Some data in the GIS database has been lost since the FY 2006 report. This prevented accurate queries on the status of dry-mesic oak, oak-pine and pine-oak forest communities on the forest (Objective 8.03) in FY 2007.

Activities to increase oak types on the piedmont include 1,757 acres of commercial thinning in the piedmont. Approximately 209 acres were precommercially thinned. Silvicultural prescriptions generally emphasize release of desirable oaks and hickories where possible.

4. The GIS database currently shows 3,176 acres of shortleaf pine with no change from baseline acreage. (See Objective 8.04.)
5. The GIS database currently shows 7,415 acres of white pine types on the Andrew Pickens Ranger District with no change from baseline acreage. (See Objective 8.06.)

6. No projects were implemented in 2007 to create gaps or alter major forest communities or conditions (See Objective 8.05).
7. Trend information was reported in the 2006 monitoring report.

### Findings

1. Steady progress is being made toward Objective 8.01. This objective should be met within the planning period with additional future projects.
2. Objective 8.02 is unlikely to be fully achieved during the planning period at current funding and staffing levels given the number of woodland, grassland, savanna, and shrubland projects being planned.
3. Thinning loblolly pine stands will allow sunlight to reach the forest floor and should stimulate advanced regeneration of oaks and hickories (Objective 8.03).
4. The objective of restoring shortleaf pine communities is unlikely to be fully achieved during the planning period because the areas of adequate soil conditions are operationally too small to be converted. Past erosion has generally left such soils in very few places. The areas found thus far tend to be very small, isolated parts of certain ridges or flats.
5. No projects were implemented in white pine stands.
6. No projects were implemented to increase structural diversity in mesic deciduous forests.
7. No new information to report.

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 7.E.2, 8.A.1, 8.B.2, 9.A.3, 9.G.2, and 10.B, and standard FW-33. The monitoring elements are defined as follows:

1. Trends in early, mid and late successional habitat by management prescription group.
2. The number of acres, conditions and distribution of existing old growth.
3. 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

1. Trends in early, mid and late successional habitat by Management Prescription have changed little since the FY 2006 report.
2. No information was collected on the old growth resource in 2007.
3. Trend information was reported in the 2006 monitoring report.

## Findings

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. Limiting factors in achieving the desired conditions include budgets, limited staffing and NEPA compliance.
2. No information was collected on existing old growth.
3. No new information to report.

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 on 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 communities/conditions. Frequency of occurrence trends in pileated woodpecker.
3. Trends in hard mast production capability.

## Results

1. Improvements were completed on the Tyger Waterfowl Area and consisted of the following:
  - Large boulders were placed around the upper parking area to prevent illegal vehicle access.

- Maintenance and repair work was done on the access road (this included re-establishing or cleaning ditches, repairing eroded sections, spreading gravel, grading the road surface, and cleaning out existing culverts).
  - Several hazard trees in the lower end of impoundment were removed.
  - A new screw gate and drain pipe was installed.
  - Additional wildlife food plots were installed (increasing to approximately 10% of the 91 acre area).
  - The spillway is scheduled to be repaired in 2008.
2. No Regional database trend information was compiled in 2007.
  3. No data was collected relative to trends in hard mast production capability.

### Findings

1. A decision to create ephemeral ponds in conjunction with the Tamassee/Ross Mountain project on the Andrew Pickens Ranger District was made. These shallow ponds will be constructed in harvested units after all other work is completed. No condition assessment work has been done.
2. No additional information to report.
3. No assessment of hard mast has been done across the forest.

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 understories of native vegetation on one to five 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 on 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. Trends in aquatic habitat conditions. Perennial and intermittent streams are managed in a manner that provides a source for large woody debris input to channels.
4. Improve, rehabilitate, or restore aquatic habitat.

## Results

1. Existing population conditions for macroinvertebrate communities are unknown. Refer to the Sumter National Forest 2005 Monitoring and Evaluation Annual Report (2005 Monitoring Report) for more detailed information on crayfish and mussels. Aquatic insect surveys were conducted in the Chattooga River watershed in October 2007. Results will be available in 2009.
2. Stream fish inventory and monitoring surveys in Sumter National Forest streams were conducted in 2002-2005 for all the districts (refer to the 2005 Monitoring Report).

Stream fish inventory and monitoring surveys were conducted on the Andrew Pickens Ranger District in 2007. A total of 12 sites were sampled in eight streams (Table 2-4). A total of 24 species were captured in both cool and cold water habitats in 2007 (Table 2-5).

## 2.2 List of Fish Surveys Sites on the Andrew Pickens Ranger District

Stream	Site #	Watershed	# Species Captured			
			2004	2005	2006	2007
Chauga River	2	Chauga River	10			
Chattooga River						
Big Bend Site		Chattooga River			11	
Ellicott Rock Site		Chattooga River			12	
Spoonauger Site			14			16
East Fork Site			9			
Highway 28 Site						17
Pigpen Branch	1	Chattooga River				4
	2					3
Tamassee Creek	1	Chattooga River				
	2					
	3					1
Crane Creek	1	Cheohee Creek	1		1	
	2		1	1	1	1
Left Tributary Site						1
Jacks Creek	1	Chattooga River				1
Townes Creek	1	Cheohee Creek				
Yellow Branch		Coneross Creek				
Bee Cove Creek		Whitewater River				
Howard Creek		Whitewater River				
Limber Pole Creek		Whitewater River				
Moody Creek		Cheohee Creek				
Wilson Creek		Cheohee Creek				
East Fork Chattooga River	1	Chattooga River				
	2				3	2
	3					
King Creek	1	Chattooga River	5	5		1
	2		1	1	1	1
Ira Branch		Chattooga River				1
Fall Creek		Chattooga River	4			

**Table 2.3 Species Captured in Andrew Pickens Ranger District Streams\***

<b>Species</b>		<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b><u>Catostomidae</u></b>					
<i>Catostomus commersoni</i>	White sucker			x	x
<i>Hypentelium nigricans</i>	Northern hogsucker	x			x
<i>Moxostoma rupiscartes</i>	Striped jumprock	x	x	x	x
<b><u>Centrarchidae</u></b>					
<i>Lepomis auritus</i>	Redbreast sunfish			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
<b><u>Cottidae</u></b>					
<i>Cottus bairdi</i>	Mottled sculpin	x	x	x	x
<b><u>Cyprinidae</u></b>					
<i>Campostoma anomalum</i>	Central stoneroller	x		x	x
<i>Clinostomus funduloides</i>	Rosyside dace			x	x
<i>Cyprinella nivea</i>	Whitefin shiner				x
<i>Hybopsis rubrifrons</i>	Rosyface chub				x
<i>Luxilus coccogenis</i>	Warpaint shiner	x		x	x
<i>Nocomis leptcephalus</i>	Bluehead chub	x		x	x
<i>Notropis leuciodus</i>	Tennessee shiner				x
<i>Notropis lutipinnis</i>	Yellowfin shiner	x		x	x
<i>Notropis spectrunculus</i>	Mirror shiner	x			x
<i>Rhinichthys cataractae</i>	Longnose dace	x	x	x	x
<i>Rhinichthys atratulus</i>	Blacknose Dace	x			x
<i>Semotilus atromaculatus</i>	Creek chub	x			x
<b><u>Ictaluridae</u></b>					
<i>Ameiurus brunneus</i>	Snail bullhead	x			x
<i>Ameiurus platycephalus</i>	Flat bullhead				
<b><u>Percidae</u></b>					
<i>Etheostoma inscriptum</i>	Turquoise darter	x		x	x
<i>Perca flavescens</i>	Yellow perch				
<i>Percina nigrofasciata</i>	Blackbanded darter	x			
<b><u>Salmonidae</u></b>					
<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

\*A total of 17 different streams were sampled in 2002-2007.

Of the 29 species (2002-2007) captured in Andrew Pickens Ranger District streams, five 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. The remaining species captured are native to the watershed. 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 a S2 species by the SC Heritage Program. It has also been identified as a species of conservation concern in South Carolina by the South Carolina Department of Natural Resources (South Carolina Comprehensive Wildlife Conservation Strategy 2005). The redeye bass, turquoise darter, blacknose dace, central stoneroller, flat bullhead, longnose dace, mirror shiner, rosyface chub, snail bullhead, Tennessee shiner, and warpaint shiner are also included as species of conservation concern in South Carolina. The population status of these species is considered to be currently stable throughout all or a significant portion of their range. The fish species diversity of the Management Indicator Community in the Chattooga River watershed has not changed in more than 20 years of sampling the main stem of the river.

3. A large woody debris survey was conducted on the main stem of the Chattooga River from Highway 28 and upstream into the headwaters. The survey was also conducted on the West Fork Chattooga River, Overflow Creek and Holcomb Creek. The smallest size class (size 1) comprised nearly half of the total large wood load. The highest amounts of the larger diameter size classes (sizes 2 and 4) were found in the West Fork and upper Chattooga River, but overall these size classes were rare. Also, the largest size class of large woody debris (size 4) was less than two percent of total large woody debris in each stream. Larger diameter wood promotes aquatic habitat stability and organic matter retention over a longer period of time. Although total large woody debris loads were near to or greater than the desired condition of 200 pieces per mile, several reaches contained lower amounts of large woody debris. This was evident in the Chattooga River from Highway 28 and upstream to the confluence of Norton Mill Creek. The report "Inventory of Large Wood in the Upper Chattooga River Watershed, November 2007" (Roghair, et. al. 2008) can be found at <http://www.fs.fed.us/r8/fms/>.
4. Habitat improvement was implemented on 2.5 miles of King Creek in 2005 and 2006. Trees were felled and placed into the stream channel to create pool habitat and cover for brook trout. Brook trout were utilizing the large woody debris in the stream during population monitoring samples in 2006 and 2007.

### Findings

1. Aquatic insect surveys were conducted in the Chattooga River watershed in October 2007. Results will be available in 2009.
2. Eight streams have been inventoried across the mountains, and repeated samples have been conducted and twenty nine species were captured. Fish species diversity has not changed in more than 20 years of sampling the main stem of the river (management indicator communities) in the Chattooga River watershed. This is an indication that activities in the drainage have not adversely affected species diversity.
3. Total large woody debris loads were near to or greater than the desired condition of 200 pieces per mile in the upper Chattooga River watershed. However, several reaches

contained lower amounts of large woody debris. This was evident in the Chattooga River from Highway 28 and upstream to the confluence of Norton Mill Creek.

4. Brook trout were utilizing the added large woody debris in King Creek during population monitoring samples in 2006 and 2007.

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

Information

This monitoring question is responsive to goals 4, 10 and 12, Objectives 10.01 and 10.02, and standards 9F-1 through 9F-8 and FW-25 through FW-28. Objective 10.01 is to maintain or restore at least eight self-sustaining populations for smooth coneflower, and if possible, four 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 eight self-sustaining populations for Georgia aster and one population for Florida gooseberry on the piedmont districts, and the habitat to support them.

The monitoring element is defined as follows:

1. Trends in recovery of threatened and endangered species (TES), 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 Forest Plan as new information is available.

Results

1. The following table shows trends in Sumter PETS.

**Table 2.4 PETS Species and Status**

<b>Species</b>	<b>Ranking</b>	<b>Status</b>
<b>Bald Eagle</b>	Federally Threatened	Three nests; including two within the Broad River on the Enoree and one nest on the Long Cane, abandoned since 1999
<b>Wood Stork</b>	Federally Endangered	No known roost sites on the forest; wetlands used for late summer foraging
<b>Carolina Heelsplitter</b>	Federally Endangered	Critical habitat on the forest includes stream reaches within two watersheds on the Long Cane
<b>Smooth Coneflower</b>	Federally Endangered	Eight populations and 1,353 plants in 2004; four “self-sustaining”, the remaining four increasing
<b>Small Whorled Pogonia</b>	Federally Threatened	Species has declined on the forest from a high of 53 plants in 1995 to seven plants in 2004 despite protection efforts
<b>Florida Gooseberry</b>	Federally Threatened	Seven colonies occupying a total of 178.65 m <sup>2</sup> within one stand on the Long Cane Ranger District
<b>Persistent Trillium</b>	Federally Endangered	Not known from the forest
<b>Relict Trillium</b>	Federally Endangered	Not known from the forest

<b>Southern Appalachian Salamander</b>	Sensitive	Hybridizes with <i>Plethodon jordanii</i> and <i>Plethodon glutinosus</i> . Common on the Andrew Pickens.
<b>Webster's Salamander</b>	Sensitive	Census in 2002-2003 documented 252 individuals on the Long Cane, with a capture rate of 8.5 salamanders/hour
<b>Bachman's Sparrow</b>	Sensitive	Few species records; species is rare on the piedmont due to lack of habitat
<b>Migrant Loggerhead Shrike</b>	Sensitive	No species records; agricultural habitat preferred by the species is lacking on National Forest system lands
<b>Chauga Crayfish</b>	Sensitive	Located by Eversole, in 23 % of streams sampled for crayfish within Chattooga and Chauga River basins
<b>Carolina Darter</b>	Sensitive	Not known from the forest but range includes the Broad River on the Enoree
<b>Robust Redhorse</b>	Sensitive	Stocked in the Broad River in 2004; Known historically from the Savannah River below Augusta, GA
<b>Diana Fritillary</b>	Sensitive	Two locations documented on the Andrew Pickens within open, fire-maintained woodlands; thought to be common
<b>Rafinesque's Big-Eared Bat</b>	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
<b>Eastern Small-Footed Myotis</b>	Sensitive	Two records from the Andrew Pickens
<b>Brook Floater</b>	Sensitive	Large population in the Chattooga River; intensive population sampling scheduled for 2005
<b>Rayed Pink Fatmucket</b>	Sensitive	Not currently known from the forest but ranges within the Saluda River watershed on the Long Cane
<b>Indigo Bush</b>	Sensitive	Two populations known from the forest, one on the Enoree and one on the Long Cane
<b>Fort Mountain Sedge</b>	Sensitive	Four sites known on the Andrew Pickens
<b>Radford's Sedge</b>	Sensitive	Common on the Andrew Pickens
<b>A Liverwort</b> <i>Cheilolejeunea evansii</i>	Sensitive	Bark of trees in moist escarpment gorges or gorge-like habitats.
<b>Spreading Pogonia</b>	Sensitive	Common on the Andrew Pickens but not well documented
<b>Whorled Horsebalm</b>	Sensitive	Common on the Andrew Pickens
<b>Mountain Witch Alder</b>	Sensitive	Three sites known from the forest
<b>Shoal's Spider Lily</b>	Sensitive	Three sites known historically from the piedmont districts on the forest; none relocated in 2004
<b>Butternut</b>	Sensitive	Nine sites known from the forest
<b>Fraser's Loosestrife</b>	Sensitive	Several locations (35 based on 1995 monitoring) known from roadsides and powerline rights-of-ways within the administrative boundary of the Andrew Pickens; 1,724 plants identified at that time; threatened by roadside maintenance activities
<b>Sweet Pinesap</b>	Sensitive	Known from eight sites on the forest, thought to be much more common on the Andrew Pickens
<b>A Liverwort</b> <i>Plagiochila caduciloba</i>	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
<b>A Liverwort</b> <i>Plagiochila sharpii</i>	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
<b>Carolina Plagiomnium</b>	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
<b>Oglethorpe Oak</b>	Sensitive	35 sites on the Long Cane confirmed; the majority comprised of only sprouts and small trees; species appears to be infected with fungus similar to chestnut blight
<b>A Liverwort</b> <i>Radula sullivantii</i>	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
<b>Hartwig's Locust</b>	Sensitive	Known from one site on the Andrew Pickens
<b>Sun-Facing Coneflower</b>	Sensitive	This plant is locally common along roadsides near Lake Cherokee
<b>Southern Oconee Bells</b>	Sensitive	Common near Lake Jocassee where it is known from three sites on the forest

<b>Georgia Aster</b>	Federal Candidate; Sensitive	57 occurrences known on the piedmont districts; several locations threatened by roadside maintenance activities
<b>Ashleaf Goldenbanner</b>	Sensitive	No sites documented on the Andrew Pickens Ranger District but species thought to be common
<b>Lanceleaf Trillium</b>	Sensitive	Two sites known on the Long Cane Ranger District
<b>Nodding Trillium</b>	Sensitive	Four sites documented on the Forest, including two on the Andrew Pickens, one on the Long Cane, and one on the Enoree
<b>Jeweled Trillium</b>	Sensitive	Six sites known on the Andrew Pickens including one at Station Cove
<b>Piedmont Strawberry</b>	Sensitive	34 sites documented on the Andrew Pickens where

### Findings

1. The federally threatened Florida (Miccosukee) gooseberry population on the Long Cane Ranger District was monitored in 2007. One large new colony was included consisting of over 1,000 stems. The habitat is late successional basic mesic hardwood forest. The population occupied a total of 178.65m<sup>2</sup>, compared to 33.85 m<sup>2</sup> in 1994 and 53.06 m<sup>2</sup> in 2003. The incidence of fruit production was low in 2007 - of an estimated 1,563 stems counted, only 2 stems or .13 percent of the stems exhibited fruit in 2007, compared to 36% of the stems in 1994 and 3% in 2003. Low fruit production could be associated with the extended drought which has occurred in South Carolina, from August 1998 to April 2003, and then again in 2007 (South Carolina State climatology web site at ([http://www.dnr.sc.gov/climate/sco/Drought/drought\\_current\\_info.php](http://www.dnr.sc.gov/climate/sco/Drought/drought_current_info.php))). Some competition from non-native invasive plant species (Japanese honeysuckle and Chinese privet) was observed, but did not appear to be an overriding factor affecting population size and reproductive capacity. Monitoring conducted since 1994 suggest that the population is stable (evidenced by colony area, numbers of clumps and stems, length of longest stem, and evidence of flowering or fruiting).

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, white-tailed deer, Eastern wild turkey, and black bear; Wildlife Management Areas (WMA) permits 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. Eastern wild turkey reproduction has been poor the last three years with 2007 being the worse. This is likely due to a combination of factors including extended drought conditions that led to limited availability of seeds and insects. Also, there may likely be declines in habitat statewide as a result of increases in pine plantations greater than ten years old which do not provide high quality habitat for turkeys.
2. SCDNR survey cooperators flushed an average of 0.59 bobwhite quail coveys per hour during the 2006-07 season, significantly higher than the flush rate in the previous season. Quail bagged per hour remained the same and the reported average covey size was significantly higher than the previous year.
3. There are 11 recreational fishing ponds totaling 89 acres on the Sumter National Forest. Largemouth bass and bream are the primary fish in the ponds. A few of the ponds have been stocked with catfish. Population monitoring was conducted on 75 acres in 2007. Water chemistry was assessed in all ponds. Habitat improvement occurred on 35 acres of ponds and 75 acres of the Strom Thurmond Reservoir on the Long Cane Ranger District.

## Findings

1. The Enoree and Long Cane Ranger Districts have made significant advance in moving toward establishment of woodland and savanna habitat. Implementation will begin on the RENEW area on the Long Cane in 2008 and beyond. The Enoree Ranger District is in the planning phase on two other similar projects.

The two piedmont districts have decisions in place to increase prescribed burning in both the dormant and growing seasons. Both districts have decisions in placed that will create additional early successional habitat through regeneration harvest over the next five years.

2. Ponds will continue to be periodically monitored to determine condition.

## **Sub-Issue 1.2 – Forest Health**

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

### 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, at 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 fire regime condition class 1 by restoring historic fire

return intervals and reducing the risk of losing ecosystem components to wildfire on approximately 250,000 acres over the 10-year planning period.

The criteria for classifying lands in fire regime condition class (FRCC) 1 are:

- Fire regimes are within or near the historical range.
- The risk of losing key ecosystem components is low.
- Fire frequencies have departed from historical frequencies by no more than one return interval.
- Vegetation attributes (species composition and structure) are intact and functioning within an historical range.

Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.

The monitoring elements are defined as follows:

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

## Results

1. In 2007, 26,276 acres were prescribed burned on the Sumter. This is up from the 2006 total of 21,788 acres and reflects a 17% increase in total acres burned.
2. Estimates for the amount of condition class 1 lands have been made using existing stand data (CISC) for the forest. The estimate indicates that approximately 14 % of the forest is currently in condition class 1. Continuing installation and use of the FSM 5140, SUPP. R8-5100-2005-1 monitoring plots and protocol will provide good information for trends of ecosystem components. To date, twenty two monitoring plots have been installed.
3. Fine particles (referred to as PM<sub>2.5</sub>) are defined as particles suspended in the air that are 2.5 micrometers or smaller in diameter. The amount of fine particulate matter released into the atmosphere by prescribed fire in 2007 was greater than the previous year (Table 2.5), reflecting the increase in acres treated.

The four PM<sub>2.5</sub> monitoring sites closest to the forest recorded increases in 24-hour fine particulate concentrations from 2005 and 2006 levels, and annual average concentrations were lower than previous years. These results indicate that even with increased emissions from prescribed fire, the 24-hour NAAQS for fine particulates (PM<sub>2.5</sub>) were not exceeded. However, the annual average fine particulate concentrations near Augusta, GA (Richmond County) do exceed the NAAQS. Currently, there is no evidence that the emissions from prescribed fires are a significant contributor to the annual average fine particulate concentrations in Richmond County (Table 2.6).

**Table 2.5 Fine Particulates (tons per year)**

FY03	FY04	FY05	FY06	FY07
423	804	799	719	867

**Table 2.6 Summary of Fine Particulate (PM<sub>2.5</sub>) Data (2004-2007)\***

Location	Site ID	2005	2005	2006	2006	2007	2007	3-year Average	
		24-hour 98 <sup>th</sup> percentile (ug/m <sup>3</sup> )	Annual Average (ug/m <sup>3</sup> )	24-hour 98 <sup>th</sup> percentile (ug/m <sup>3</sup> )	Annual Average (ug/m <sup>3</sup> )	24-hour 98 <sup>th</sup> percentile (ug/m <sup>3</sup> )	Annual Average (ug/m <sup>3</sup> )	24-hour 98 <sup>th</sup> percentile (ug/m <sup>3</sup> )	Annual Average (ug/m <sup>3</sup> )
Edgefield County, SC	450370001	35	13.6	28	13.6	29	12.4	31	13.2
Greenwood County, SC	450470003	32	14.1	27	14.1	29	12.9	29	13.7
Oconee County, SC	450730001	33	11.5	28	11.6	28	11.1	30	11.4
Richmond County, GA**	132450091	31	16.1	31	16.5	34	15.9	32	<b>16.2</b>

\* The fine particulate standard is violated if the average of 3-years of annual means is 15 ug/m<sup>3</sup> 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 35 ug/m<sup>3</sup> or greater. Source: <http://www.epa.gov/air/data/geosel.html>

\*\* This site is near the Long Cane Ranger District. ug/m<sup>3</sup> defined as micrograms per cubic meter.

Prescribed fire also emits small amounts of nitrogen oxides and large amounts of volatile organic compounds, which can contribute to increases in ground-level ozone. The other Forest Service activity that releases nitrogen oxides is vehicle and heavy equipment use. Three of the five ozone monitors within or near the forest are above the NAAQS. Atmospheric modeling would need to be utilized to demonstrate that Forest Service activities are not a significant contributor to unacceptable levels of ozone (Table 2.7).

**Table 2.7 Summary of Ozone Data\***

<b>Monitor Location</b>	<b>Year</b>	<b>Fourth highest 8-hour average</b>	<b>3 Year Average</b>
Abbeville County	2006	0.079	<b>0.079</b>
Chester County	2006	0.075	<b>0.076</b>
Edgefield County	2006	0.068	0.070
Oconee County	2006	0.065	0.072
Union County	2006	0.077	<b>0.076</b>

\*The ozone standard is violated if the 3-year average of the fourth highest 8-hour average ozone concentration is 0.076 ppm or higher.

4. In FY 2007, 1,891 acres of commercial thinning were sold.
5. The Sumter National Forest treated 700 acres of non-native invasive plant species (NNIS), including Johnson grass, kudzu, Chinese privet, Chinese wisteria, and autumn olive.

Inventories were conducted for NNIS plants in portions of the Chattooga Wild and Scenic River Corridor in early 2007, and some areas were treated. Chinese silvergrass (*Miscanthus sinensis*) was found along Burrell's Ford Road (18 clumps just north of the entrance to the campground parking lot to the river, with one next to the Chattooga River); along the gated road to Burrell's Ford campground (numerous clumps); along SC107 from Cherry Hill campground to Burrell's Ford Road (13 clumps in proximity to the entrance); and between Cherry Hill campground and Winding Stairs Road (6 clumps). High infestations of autumn olive and Chinese privet were identified and treated at Russell Fields. High infestations of Chinese privet and English ivy were identified and treated at the Highway 28 boat landing and autumn olive and Chinese privet were identified and treated along Low Water Bridge Road. Previously treated areas on the Enoree and Long Cane were monitored.

Dr. Charlie Horn identified 89 NNIS Plant populations in the Pittman project area, infesting almost every stand. Most common were the two species *Sericea lespedeza* [*Lespedeza cuneata* (26 stands)] and Japanese honeysuckle [*Lonicera japonica*] - significant in 22 stands]. The two species producing the greatest visible change in community structure were kudzu (*Pueraria lobata*) and Chinese wisteria (*Wisteria sinensis*).

Since 2004, non-native invasive plants have been treated on approximately 1,750 acres. Of these acres treated and monitored in 2007, 25% had infestations which were at very low levels (<1% cover). This was within the desired condition for these areas.

## Findings

1. Prescribed burning on the forest in 2007 was 26,276 acres. All three districts shared personnel and equipment to help achieve this forest-wide objective. The results of this effort were an improvement in the total number of acres burned from the previous year. The forest-wide objective is likely achievable in the future even with the additional complexity of burning and smoke management issues. Also, the fire organization for the Sumter has been reorganized in an effort to be more productive and efficient.
2. The number of acres in condition class 1 is increasing because of increased prescribed fire use and non-commercial and commercial mechanical treatments of forest stands. Stewardship contracts and timber sales are providing more opportunities for treating fuels than existed a few years ago.
3. In March 2008, the Environmental Protection Agency lowered the ozone standard from 0.08 parts per million (ppm) to 0.075 ppm. Ozone monitoring results collected from counties intersecting the Sumter indicate that air quality is above the NAAQS in the counties of Abbeville, Chester, and Union. If high 8-hour averages continue, then there is a possibility the Environmental Protection Agency could designate the three counties as nonattainment in the year 2009. The forest will work with the State of South Carolina by providing emissions information relative to prescribed burning to help in atmospheric modeling.
4. In September 2006, the Environmental Protection Agency lowered the daily PM<sub>2.5</sub> NAAQS from 65 to 35 ug/m<sup>3</sup>. The annual standard remains the same at 15 ug/m<sup>3</sup>. According to current language in the regulations, states will provide EPA with nonattainment area recommendations (for the new standard) by November 2007, using monitoring data from 2004-2006. EPA will issue the final nonattainment designations in November 2009, and the new nonattainment designations will be effective in April 2010. It appears that most monitors around the Sumter National Forest will remain in attainment of the PM<sub>2.5</sub> standards, except Richmond County, GA. The forest will work with the State of South Carolina by providing emissions information relative to prescribed burning to help in atmospheric modeling.
5. From FY 2004 through FY 2007, the Sumter National Forest sold 10,080 acres of commercial thinning.
6. Control of non-native invasive plant populations on the districts is ongoing. Emphasis needs to be placed on inventories and on monitoring, particularly for cogongrass, in project areas creating disturbed soil, high light environments, or introducing fill material or equipment from outside South Carolina.

## **Sub-Issue 1.3 – Watershed Condition and Riparian Areas**

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 in the piedmont during the 10-year planning period.

The monitoring elements are defined as follows:

1. Are State BMPs 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 in 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. Random sampling of ongoing projects indicated compliance with BMPs.
2. A total of 18 acres were treated on the Enoree Ranger District to improve soil and water conditions utilizing KV funding in compartments 2, 5, 6, 8, 13, 16, and 18. This included five acres of site stabilization using native grasses, two acres of native grass establishment, seven acres of gully stabilization, two acres stabilization, and two acres treating user created trails for erosion control and soil recovery needs. User created horse and ATV trails are expanding and causing erosion and other impacts that need to be addressed. Land purchases and exchanges also contain areas needing stabilization work.
3. A total of 205 acres of severely eroded, low site lands in poor watershed condition were fertilized using soil and water (NFVW – 75 acres) and regional KV improvement (CWK2

– 130 acres) funding. All treated 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 on track and close to the planned level of 8,000 acres over a decade.

4. No work was done to develop a protocol relative to determining the in-stream flow needed to protect streams, habitats, recreation, and aesthetic values.

### Findings

1. BMP compliance checks with the SC Forestry Commission on areas with ground disturbance or streamside management have been slowly developing into a regular activity.
2. The 18 acres of soil and water improvements under Objective 1.01 is substantially below the 150 acre annual average needed to meet plan direction. The plan objectives for addressing poor soil and water conditions due to eroding gullies and barrens (galls), abandoned or unclassified roads, user created trails and unstable streambank appear to be less likely to be achieved over the planning period.
3. The North Fork Chattooga Watershed and user capacity analysis provided inventory of trails. The forest continues to close, stabilize and treat illegal trails within a year of their being found, but increased funding or other mechanisms may be needed to achieve this.

There was some progress toward inventory and documentation of off trail horse, ATV, and other unauthorized ground disturbing uses in 2006 and 2007. System trail maintenance has increased, and new trails are better designed and maintained. Trails have also been closed for wet weather to reduce resource damage. The temporary and seasonal ATV closures are noted on the forest website and are proving important toward improving trail quality and reducing damage and maintenance costs associated with wet weather use.

4. Attention to water rights and in-stream flow methodologies and determination is needed to be consistent with plan direction (Goal 2, Objective 2.01). Increased issues with water supply and quality are evident within the state, especially in the series of drought years and questions about global climate change. Some of these issues are regional in scope.

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 through 11-25. Objective 4.01 is to create and maintain dense understory of native vegetation on one to five 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. 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, and non-native invasive plants).

### Results

1. Assessment of riparian condition is typically made during project planning. Projects are designed to maintain riparian/stream vegetation and avoid activities that contribute to stream bank failure.
2. No projects were implemented to create dense understory conditions or improve/restore structural diversity and composition within riparian corridors. Work proposed in riparian corridors was ancillary to vegetation treatments in upland areas.
3. There was no inventory of riparian areas.

### Findings

1. Forest and district staffs are implementing the riparian prescription. Riparian identification, delineation, functions and values are considered in field assessments on a project-by-project basis. Resource issues are identified during field reviews of site-specific projects. The interdisciplinary team usually makes recommendations to the district ranger on specific projects relative to improvement work or mitigation measures to reduce or prevent further impacts. Impacts to riparian areas from project implementation need to be monitored to determine if standards and guidelines are appropriate or if changes are needed.
2. Current riparian conditions need to be more formally assessed in conjunction with upland vegetation treatments and, where possible, to integrate riparian treatments into project design.
3. Riparian current condition assessments/inventories need to be included in the early stages of project planning.

## 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 relative to nature-based recreational experiences.

#### Results

1. An Equestrian Analysis of the Francis Marion and Sumter National Forest was conducted in FY06 by Price Waterhouse Coopers (PwC) as well as an inventory of user created horse trails. Refer to the 2006 Sumter Monitoring Report for the results of these analyses. In FY07 the information contained in the PwC report was used to begin crafting an equestrian strategy for the forest. One preliminary action item was the development of a proposal for rehabilitating facilities and improving services at the Whetstone Horse Camp on the Andrew Pickens Ranger District. This project is slated for design in FY08 and implementation in FY09.
2. An analysis of the Oscar Wigington National Forest Scenic Byway on the Andrew Pickens Ranger District was conducted in FY 07 by the Landscape Architect Department at Clemson University. The report entitled "*The Oscar Wigington Scenic Byway Management Guide*" includes several inventories, including nature-based recreational opportunities. It also proposes a vision and goals for the Byway, along with a phased-in action plan. The report will be used in FY08 to support the development of a State Scenic Byway nomination proposal for the Wigington Byway, as well as help with the development of a Byway Corridor Management Plan that will include action items designed to improve nature based experiences along the road.
3. A review of the two OHV Trails on the Long Cane Ranger District was conducted in FY07 by the "Trails Unlimited" Enterprise Team. The overall purpose of the review was to:
  - Assess the condition of the Cedar Springs and Parson's Mountain OHV Trails (approximately 22 miles).

- Document trail conditions and recommend any appropriate changes in trail maintenance, operations, location, or other needs.
- Provide cost data for a financial analysis of the Parson's Mountain and Cedar Springs OHV Trails (e.g., deferred maintenance (reconstruction) costs, costs for needed trail relocations and annual maintenance costs).

## Findings

1. The 2002 and 2008 NVUM surveys will be used to begin to establish trends in recreation on the National Forests.

A review of the two OHV trails on the Long Cane Ranger District found the following:

- Approximately 25% of the trail mileage appears to be in good condition and would require no immediate work to bring it to an acceptable standard.
- A small percentage of the trail mileage (5% or less) should be considered for relocation to a more sustainable alignment.
- The remaining trail mileage (approximately 70%) could be brought to a higher standard by simply changing the maintenance techniques currently used and applying the revised techniques.
- Public information about the OHV trails was readily available on the Forest Service Internet site, including a map showing the trail alignment, roads in the area, and major watercourses.
- A sign plan should be developed and trail signing within the OHV area upgraded.

More detailed information on the OHV Trails Review of the Long Cane Ranger District is available in the "*Cedar Springs and Parsons Mountain OHV Trail Report*" (USDA Forest Service Trails Unlimited Enterprise Team, 2007).

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' impact to riparian areas and/or water quality.

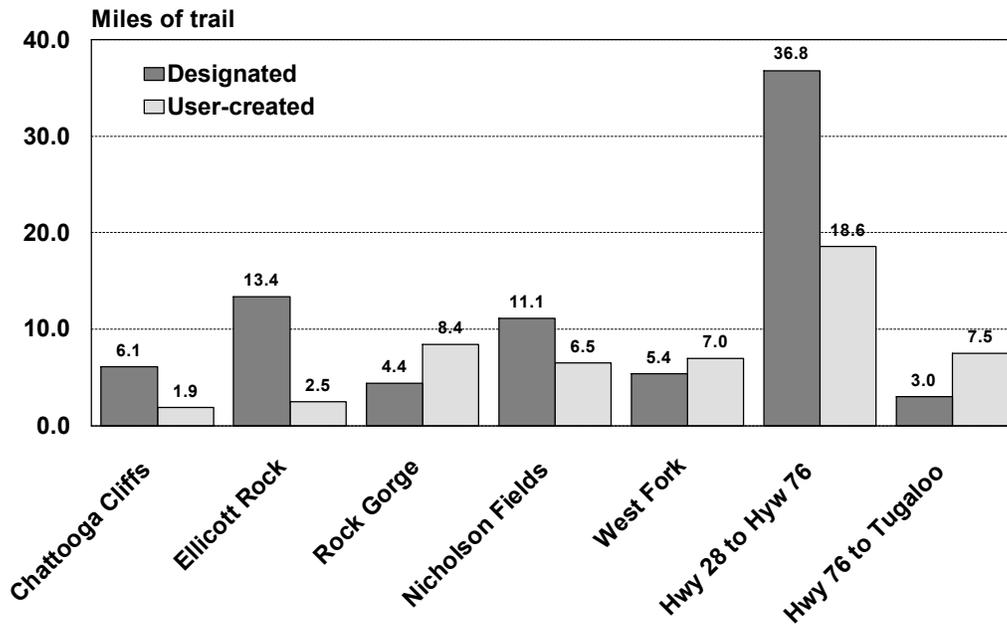
2. Impacts associated with OHV activities.
3. Are motorized and non-motorized trails being maintained?

Results

1. A biophysical inventory of the Chattooga Wild and Scenic River corridor and the Ellicott Rock Wilderness were conducted as a part of the Chattooga River Carrying Capacity Analysis.

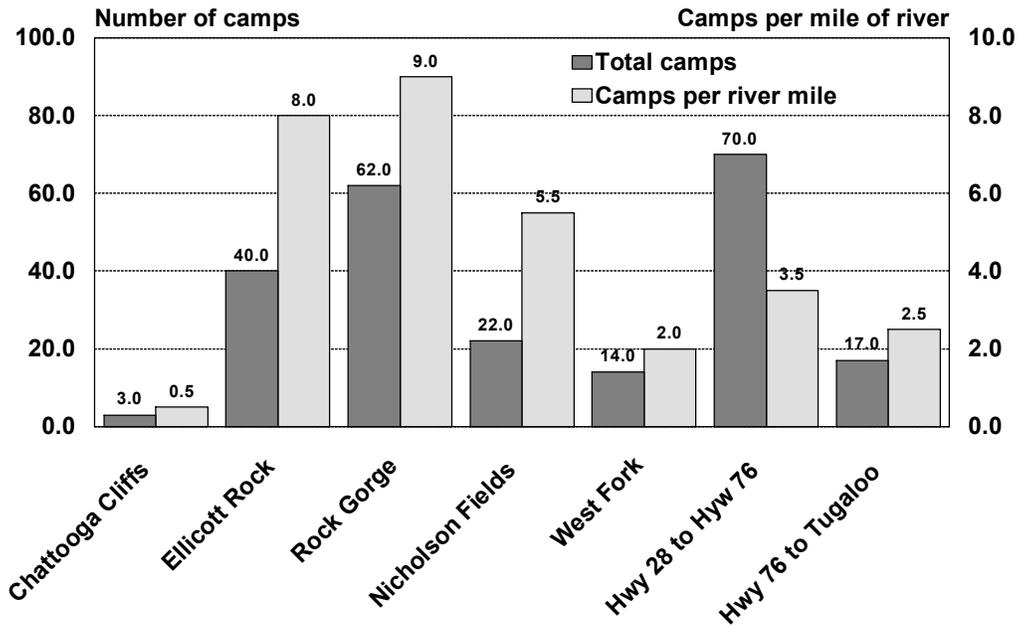
The inventory documented the miles of designated and user-created trails and the number of sites along trails with erosion problems. More detailed information is available in the report entitled “*Capacity and Conflict on the Upper Chattooga River – An Integrated Analysis of 2006-2007 Reports*” (Whittaker and Shelby, 2007).

**Figure 2.1 Miles of Trail by Stream Segment**

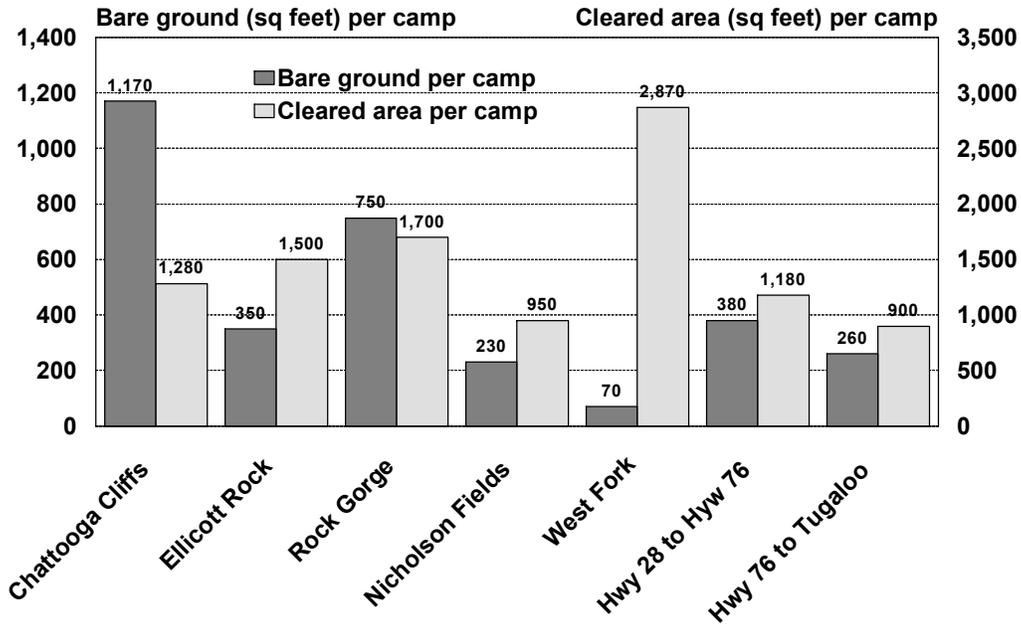


The biophysical inventory also documented the number of dispersed campsites in the corridor, and at each camp estimated the amount of bare soil (in square feet), the additional cleared area (in square feet), the amount of litter at the site (in gallons), and the number of damaged trees in the area. Summarized information is given below; more detailed information is available in the Whittaker and Shelby report.

**Figure 2.2 Total Number of Campsites and Campsites per Mile by Stream Segment**



**Figure 2.3 Average Bare Ground and Cleared Areas per Campsite by Stream Segment**



Information about current use levels and future trends were also collected and compiled as part of the “*Chattooga River Carrying Capacity Analysis*”.

Riparian areas impacted by recreation activities were identified during routine trail and facility condition surveys in addition to the previously described two studies. High priority areas were identified and brought forward to the Recreation “Out-year Program Planning Team” for project prioritization, funding and scheduling in the out-years.

2. Wet weather closures on OHV trails continue to work well and are serving to mitigate much of the impacts on riparian areas and other areas on or adjacent the trails.
3. Trail maintenance continues to be a high priority for the recreation program on the forest and is funded annually through appropriated, recreation fee, and grant dollars (the latter is used almost exclusively for maintaining/reconstructing OHV trails to increase financial and environmental sustainability).

### Findings

1. Several general conclusions may be derived from the results from the recently completed biophysical inventory:
  - There are biophysical impacts from trails and campsites on the Upper Chattooga from current uses. Unacceptable impacts will be addressed in the future with trail and site design, rehabilitation projects, and more regular clean-up.
  - Many biophysical impacts are related to pioneering users, so potential “new” uses such as boating deserve attention and monitoring.
  - Many biophysical impacts can be mitigated with “technical fixes” (site hardening or changes that direct use to non-sensitive or more durable areas) or education/regulation (encouraging people to adopt better “low impact” practices). It is relatively rare (because it is usually less effective) to address biophysical impacts through use limits.
2. The policy of closing OHV trails during wet weather has reduced impacts on riparian areas and other natural resources.
3. Increased emphasis on trail maintenance across the forest is paying off, especially on the OHV and equestrian trails. Many of the trails are in the best condition they have ever been in. This is because these facilities tend to be where the higher impacts to natural resources occur. Grant funds have been used extensively to help meet the maintenance needs of the OHV trails along with the fee dollars generated at the facilities themselves. Fee dollars have been generally used as matches for the grant funds.

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. In the piedmont (Objective 23.02), increase acreage that is at least ½ mile from an open road to 35,000 acres, emphasizing blocks of land 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 integrity (SIO) and recreation opportunity spectrum (ROS) objectives.

### Results

1. Project and field review of ground disturbing activities were ongoing in FY 07. Proposed projects on the Sumter National Forest met the established SIO standards and ROS objectives.

The acreage that is at least ½ mile from an open road on the piedmont has not been measured.

### Findings

1. A current condition assessment needs to be completed relative to Forest Objective 23.02.

Ongoing field reviews of projects being implemented are needed to determine that SIO and ROS objectives are being met.

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

MQ 11: What is 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 wilderness characteristics?

### Results

1. A biophysical impact inventory was completed for the Chattooga Wild and Scenic River and the Ellicott Rock Wilderness. The results of that inventory are summarized in section MQ 10.

## Findings

1. Visitor use impacts are occurring that are adversely affecting wilderness characteristics.

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. Refer to MQ 10.

## Findings

1. The findings of the biophysical inventory completed in FY 07 are summarized in section MQ 10 above. In short, the findings indicate that visitor use impacts are occurring that could be affecting outstandingly remarkable values.

## **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 results of site monitoring are presented below.

**Table 2.8 Archaeological Sites**

Total number of sites monitored	50
ARPA investigations	0
Other vandalism	0
Water erosion	4
Damaged by logging	1
Sites damaged by forest users	0
Sites damaged by fire	1
Sites undisturbed	44

Site monitoring was entered into the Forest Service Heritage INFRA database under Priority Heritage Assets, Section 110 heritage protection monitoring, and Section 106 project related monitoring. A total of twenty-eight priority heritage asset sites were monitored. An additional twenty-two sites were monitored for 110 and 106 monitoring purposes.

Several sites are being damaged by water erosion along the shoreline of the Strom Thurmond Lake on the Long Cane Ranger District, including 38MC207, 38MC208, 38MC218 and 38MC219. Site 38MC1642 received some damage from recent logging. The Rose Hill Slave Cemetery 38UN225 was burned over by a prescribed fire. 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. Metal detecting and digging for artifacts on historic period sites continues to be a concern.

## Findings

1. The amount of illegal digging and looting of prehistoric sites found is less than in fiscal year 2006. The forest needs to continue to track monitoring in INFRA and develop Heritage Preservation Plans for at risk sites. Plowed wildlife openings should be inventoried for heritage resources and any significant sites found protected. A forest Heritage Curation Plan should be developed. The effects on archeological sites due to dispersed recreation should be assessed. Site management plans should be written for priority heritage assets and significant threatened sites. Opportunities should be sought for partnerships with private organizations and individuals to monitor and protect heritage sites.

### Issue 3. Organizational Effectiveness

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

#### Information

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

The monitoring element is 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? 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 3.7 MMCF of forest products for sale in management prescription 10B. Total Sumter offer (all management prescriptions) was 7.1 MMCF.
2. Funding for road construction, reconstruction, and maintenance comes from both appropriated monies and timber harvest.

**Table 2.9 Road Activities**

<b>Activity</b>	<b>Unit of Measure</b>	<b>FY 05</b>	<b>FY 06</b>	<b>FY 07</b>	<b>10 Year Plan Estimate</b>
<b>Road Construction</b>	Miles	0.0	0.0	0.2	9.0
<b>Road Reconstruction</b>	Miles	4.3	3.6	3.2	342.0
<b>Timber Roads</b>	Miles	20.0	28.1	37.0	N/A
<b>Roads Decommissioned</b>	Miles	5.5	0.0	0.0	0.0
<b>System Mileage*</b>	Miles	1,059	1,062	1,062	N/A
<b>Roads Maintained</b>	Miles	782	734	754	8,450

\* Increases in road mileage from one year to the next are a result of new land acquisitions and better distance surveys on existing roads.

2. The annual budget is shown in Table 2.10.

**Table 2.10 Francis Marion and Sumter National Forests Budget**

<b>Activity</b>	<b>Unit of Measure</b>	<b>FY 04</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>10 Year Plan Estimate</b>
*Annual Budget	MMS\$	14.1	10.8	10.6	9.4	N/A

\* The budget allocation includes both the Sumter and Francis Marion National Forests and is not tracked separately. Annual Budget expenditures are adjusted for inflation and do not include any dollars allocated for grants and other specific programs.

3. The FY 2007 payments to the 11 counties are displayed in Table 2.11.

**Table 2.11 Returns to South Carolina Counties in FY 2007**

<b>Abbeville</b>	<b>\$151,217.78</b>	<b>Laurens</b>	<b>\$136,538.55</b>
<b>Aiken</b>	<b>\$3,022.19</b>	<b>McCormick</b>	<b>\$320,029.07</b>
<b>Berkeley</b>	<b>\$708,813.13</b>	<b>Newberry</b>	<b>\$369,031.84</b>
<b>Charleston</b>	<b>\$227,744.14</b>	<b>Oconee</b>	<b>\$521,221.04</b>
<b>Chester</b>	<b>\$80,735.84</b>	<b>Saluda</b>	<b>\$28,495.00</b>
<b>Edgefield</b>	<b>\$201,947.52</b>	<b>Union</b>	<b>\$390,728.89</b>
<b>Fairfield</b>	<b>\$72,208.92</b>	<b>Total</b>	<b>\$3,281,458.32</b>
<b>Greenwood</b>	<b>\$69,726.40</b>		

### Findings

1. A little over half the timbered offered for sale was from management prescriptions 10B.
2. The road program continues to emphasize the reconstruction of roads to meet the intended traffic volumes safely and lessen the impacts to forest resources. System road projects associated with timber sales were mainly for resurfacing, culvert replacement and removal of vegetation encroaching on the roadway. Timber road mileages continued to increase with more harvest activity while program road reconstruction continued to decrease with a flat road budget and cost increases from inflation and gas prices. The forest constructed a 0.2 mile road extension to access timber at the back of a compartment.

The forest continued to assess the backlog of deferred maintenance needs with the focus on open roads classified as maintenance level 3, 4, and 5. The forest began to identify roads in maintenance level 3 that could be shifted into maintenance level 2. This will reduce the road maintenance cost in future years only slightly as most of these roads receive very little maintenance dollars now. The deferred maintenance identified on 610 miles of maintenance level 3, 4, and 5 roads was estimated at \$ 22,461,200.

Forest road mileage remained steady in FY 07, but the forest anticipates some increases in future years with the addition of roads in newly acquired lands and further adjustments to existing roads from more accurate road surveys. No roads were decommissioned for the second year in row due to other funding requirements. The forest will shift roads identified in FY 07 into the lower maintenance level 2 in FY 08 and begin to reduce road maintenance were possible.

2. The forest budget has declined sharply from earlier in the decade.
3. Payments to counties are relatively unchanged.

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. 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

1. 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 desired condition for vegetation?
2. Management of newly acquired lands.

## Results

1. Many projects are now entering the implementation phase, and there will be opportunities to review them in the field to determine if desired conditions are being achieved and if standards are adequate to protect resources.
2. Approximately 432 acres of land were purchased on the Long Cane Ranger District during the fiscal year.

## Findings

1. An integrated resource review should be scheduled for the two piedmont districts, Enoree and Long Cane Ranger, to review specific projects relative to desired conditions, Forest Plan standards and resource effects.

### Chapter 3. FY 2008 – FY 2010 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:** ongoing

**Status:** Data on the condition of rare communities on the Forest continues to be collected annually

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

**Responsibility:** Forest biologists

**Date:** ongoing

**Status:** No projects were implemented in 2007 to create gaps.

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

**Responsibility:** Forest biologists

**Date:** FY08

**Status:** Most vegetation management projects include release and site-preparation treatments to favor desirable hardwood species (ie. oaks and hickories). No new wetlands have been proposed.

-----  
**d) Action:** National Visitor Use Monitoring (NVUM) needs to be redone every 5 years and to establish trends in recreational use.

**Responsibility:** Forest Landscape Architect.

**Date:** FY08

**Status:** Inventory is planned for 2008 and should provide trend information when combined with the 2003 information.

-----

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

**Responsibility:** Districts and SO.

**Date:** FY08

**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.

-----  
**f) Action:** An Integrated Resource Review (IRR) should be conducted on the Enoree and Long Cane Ranger Districts.

**Responsibility:** Districts and SO.

**Date:** FY09

**Status:** Will be planned in 2009.

-----  
**g) Action:** The Forest will work with the State of South Carolina and supply information relative to prescribe burning on the Forest in order to help the State meet air quality standards relative to fine particulates and ozone.

**Responsibility:** Districts and SO.

**Date:** FY10

**Status:** To be started in FY 2009

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**Actions Which Require Forest Plan Amendment or Revision**

None identified at this time.

## Appendices

### Appendix A - List of Preparers

The following individuals contributed to this report:

Jim Bates	Forest Archaeologist
Bill Hansen	Forest Hydrologist
Ed Hedgecock	Forest Engineer
Dennis Law	Forest Soil Scientist
Robert Morgan	Forest Archaeologist
Gary Peters	Forest Wildlife Program Manager
Robin Mackie	Forest Ecologist/Botanist
Mae Lee Hafer	Resource Staff Officer
Stephen Wells	Fire, Lands and Minerals Staff Officer
Tony White	Planning, Engineering, Recreation, and Heritage Resources Staff Officer
Joe Robles	Recreation Specialist
Robbin Cooper	Landscape Architect
Jay Purnell	Forest Silviculturist
Dan Shea	Fuels Specialist
Bill Crollly	Forest Fire Management Officer
Joel Harrison	GIS Specialist
Bill Jackson	Air Resource Specialist
Jeanne Riley	Fisheries Program Manager
Jim Knibbs	Environmental Coordinator

## **Appendix B - Amendments to Forest Plan**

There have been no amendments to the Revised Sumter Land and Resource Management Plan.

## **Appendix C - Summary of Research Needs**

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

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

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

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

# SUMTER NATIONAL FOREST FISCAL YEAR 2007 MONITORING AND EVALUATION ANNUAL REPORT

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

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