

**Fiscal Year 2006**

**Monitoring and Evaluation Annual Report**

**Sumter National Forest**

**Revised Land and Resource Management Plan**

**United States Department of Agriculture  
Forest Service  
Southern Region**

## Table of Contents

<b>Forest Supervisor’s Certification .....</b>	<b>3</b>
<b>Executive Summary of Monitoring and Evaluation Results and Report Findings .....</b>	<b>4</b>
<b>Chapter 1. Introduction .....</b>	<b>9</b>
<b>Chapter 2. Monitoring Results and Findings.....</b>	<b>10</b>
<b>Issue 1. Ecosystem Condition, Health and Sustainability .....</b>	<b>10</b>
<b>Sub-Issue 1.1 – Biological Diversity .....</b>	<b>10</b>
<b>Sub-Issue 1.2 – Forest Health.....</b>	<b>25</b>
<b>Sub-Issue 1.3 – Watershed Condition and Riparian Areas .....</b>	<b>29</b>
<b>Issue 2. Sustainable Multiple Forest and Range Benefits .....</b>	<b>32</b>
<b>Sub-Issue 2.1 – Recreational Opportunities.....</b>	<b>32</b>
<b>Sub-Issue 2.2 – Roadless Areas/Wilderness/Wild and Scenic Rivers.....</b>	<b>37</b>
<b>Sub-Issue 2.3 – Heritage Resources.....</b>	<b>38</b>
<b>Issue 3. Organizational Effectiveness.....</b>	<b>40</b>
<b>Chapter 3. FY07 and 08 Action Plan and Status .....</b>	<b>44</b>
<b>Appendices.....</b>	<b>46</b>
<b>Appendix A - List of Preparers.....</b>	<b>46</b>
<b>Appendix B - Amendments to Forest Plan .....</b>	<b>47</b>
<b>Appendix C - Summary of Research Needs .....</b>	<b>48</b>

## 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 29, 2007  
Date:

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

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

Summary of Key Results and Findings:

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

Monitoring of basic mesic cove communities was accomplished on all three Districts: at Enoree River Bluffs on the Enoree; Johns Creek and the Turkey/Stevens Creek riparian corridors on the Long Cane; and Station Cove, Station Mountain Cove, Brasstown Creek and Brasstown Falls, and Tamassee Creek on the Andrew Pickens.

Chinese privet, Japanese honeysuckle, and autumn olive, all non-native invasive plants, were noted at Johns Creek, Turkey/Stevens Creek, and at Tamassee Creek. Approximately 24 acres of Chinese privet and autumn olive were treated at Tamassee Creek and 20 acres of Chinese privet were treated along the Turkey/Stevens Creek riparian corridor in partnership with the Student Conservation Association (SCA).

The Sumter National Forest Ranger Districts treated 103 acres in 2005 for non-native invasive species as compared to 650 acres in 2006, including 225 acres on the Andrew Pickens, 400 acres on the Enoree and 25 acres on the Long Cane.

Recreational impacts to rare communities (trampling of vegetation) were observed at Station Cove, Tamassee Creek and Brasstown Falls. The South Carolina Native Plant Society, Forest Service and South Carolina Parks, Recreation and Tourism (SC PRT) entered into a challenge-cost-share agreement for improvements to trails and to provide resource interpretation at Station Cove.

Two vegetation management projects are being implemented on the Andrew Pickens Ranger District. The Chauga Loblolly Removal project and the Cedar Creek project will both remove non-native loblolly pine plantations and restore native tree species emphasizing shortleaf pine, oaks and hickories. The Ross Mountain /Tamassee project is in the environmental analysis phase and is also proposing to treat about 307 acres of loblolly pine plantations.

Activities to increase oak species on the piedmont include 886 acres of commercial thinning specifically in management prescription 9.G.2 - Restoration of Upland Oak-Hickory and Mixed Pine-Oak-Hickory Forests. A total of 2,482 acres of stands to be commercially thinned were sold, and 209 acres were precommercially thinned on the two piedmont Districts. Thinning loblolly pine stands allows increased sunlight to reach the forest floor and stimulates advanced regeneration of oaks and hickories. Generally speaking, silvicultural prescriptions favor release of desirable hardwoods when present.

Trends in forest birds, including those identified as Management Indicator Species (MIS), relative to physiographic region have been compiled in *Population Trends and Habitat Occurrence of Forest Birds on Southern National Forests, 1992-2004*. The Andrew Pickens Ranger District occurs in the Southern Blue Ridge and the Long Cane and the Enoree Ranger Districts occur in the Southern Piedmont Physiographic Regions.

Declines in MIS populations in the Southern Blue Ridge reflect a dense overstory pine canopy with dense midstory and understory vegetation. Overstory canopy gaps in combination with prescribed fire use are needed to add to habitat diversity for species. Increases in some bird counts are likely due to large forested blocks where oaks are common.

Declines in MIS populations in the Southern Piedmont reflect overstocked conditions in pine forests. High stand densities and a lack of canopy gaps are inhibiting desirable understory shrubby layers from developing, even though prescribed burning is fairly widespread across the piedmont. An abundance of mature hardwoods, pines and mixed pine/hardwoods and a lack of early successional and woodland habitat are also adding to some declines. American woodcock (*Scolopax minor*) populations are down throughout the mid-Atlantic region. This species is commonly associated with riparian areas, and declines are largely attributed to increased urbanization, fragmentation of habitat and lack of forest disturbance.

A project specifically designed to create canopy gaps and enhance hardwood hard mast for wildlife is in the planning stages on the Andrew Pickens Ranger District. Woodland habitat development is planned on 207 acres of the Andrew Pickens Ranger District, 447 acres on the Enoree Ranger District and 964 acres on the Long Cane Ranger District. These projects should be entering the implementation phase in the next several years.

A total of 16 streams were sampled on the Andrew Pickens Ranger District, including several streams to determine the distribution of trout. A total of 27 species have been captured in cool and cold water habitats. Five species are considered non-indigenous or introduced species to the watershed (Warren, et al. 2000). These include the green sunfish (*Lepomis cyanellus*), yellowfin shiner (*Notropis lutipinnis*), yellow perch (*Perca flavescens*), rainbow trout (*Oncorhynchus mykiss*), and brown trout (*Salmo trutta*). Brown and rainbow trout have invaded brook trout (*Salvelinus fontinalis*) habitat and replaced this species in much of its historical range. The remaining species captured are native to the watersheds, and the population status of these species are considered to be currently stable throughout all or a significant portion of their range. Most species captured in 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 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 in 2006.

Surveys for the federally endangered Carolina Heelsplitter (*Lasmigona decorata*) were conducted on Duncan Creek on the Enoree Ranger District and on Turkey Creek and its

headwaters on the Long Cane Ranger District in fiscal years 2005 and 2006. Occurrences of eight live and one dead heelsplitter were found in the Upper Turkey Creek sub-basin on the Long Cane. No listed mussel species were found on the Enoree.

Surveys for Georgia Aster (*Symphyotrichum georgianum*) were conducted on the Long Cane Ranger District, and over 1,700 plants from 45 new locations, all along roadsides or powerline rights-of-ways, were found. One of the two populations of the sensitive leadplant (*Amorpha schwerini*) on the Sumter National Forest was monitored. Less than one percent of the population had flowered, although 120 plants were seen from 3 colonies. The two populations of the sensitive nodding trillium (*Trillium rugelii*) were monitored in 2006. One population from the Enoree consists of over 400 plants, and the other population from the Long Cane consists of over 200 plants. A smooth coneflower (*Echinacea laevigata*) population planted at Long Nose on the Andrew Pickens in October 2004 was monitored, and 190 plants (27% flowering) were located out of 331 planted. A decision to improve habitat for the sensitive sun-facing coneflower (*Rudbeckia helipsidis*) was completed on the Andrew Pickens Ranger District.

Smooth coneflower is increasing in Oconee County and close to achieving recovery objectives. However, continuous active management such as prescribed fire and midstory control including thinning are needed to perpetuate self-sustaining populations in Oconee County. Recovery objectives for small whorled pogonia (*Isotria medeoloides*) (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. The populations on the Andrew Pickens do not meet recovery objectives for the species.

In general, Eastern wild turkey (*Meleagris gallopavo*) reproduction in 2006 was poor due to inclement weather during brood-rearing season. White-tailed deer (*Odocoileus virginianus*) harvest estimates continue to be relatively stable from previous years. Black bear (*Ursus americanus*) populations indicate an increase in population numbers and expansion of their range in the South Carolina mountains. Bobwhite quail (*Colinus virginianus*) numbers continue to show declines statewide, but appear to have stable to upward trends on portions of the piedmont on the Enoree and Long Cane Ranger Districts.

In 2006, 21,788 acres were prescribed burned on the Sumter National Forest, just short of the annual objective of 23,600 acres per year set by the Forest Plan. This is up from the 2005 total of 17,456 acres. Estimates for the amount of condition class 1 lands have been made using existing stand data for the Forest. Condition class 1 lands are defined as those where fire regimes are within an historical range, and the risk of losing key ecosystem components is low. Approximately 14 % of the Forest is currently in condition class 1. The number of acres in this condition class is increasing because of increased prescribed fire use and non-commercial and commercial mechanical treatments of forest stands. Increased use of 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 2006 was higher than the previous year, reflecting the increase in acres treated. However, the four PM<sub>2.5</sub> monitoring sites closest to the Forest recorded decreases in 24-hour fine particulate concentrations from 2004 and 2005 levels, and annual average concentrations similar to previous

years. The five ozone monitors within or near the Forest continue to show levels well below the National Ambient Air Quality Standards (NAAQS), again demonstrating that Forest Service activities are not contributing to unacceptable levels of air pollution.

A total of 35 acres were treated to improve soil and water conditions. This included gully erosion control consisting of site reshaping and restoration in compartment 73 on the Enoree Ranger District. Additional areas treated included user-created trails and native grass enhancement in seed production areas. The seed production areas provide a source of native grass seed for erosion control and soil recovery work. The amount of soil and water project work is below the Forest Plan projected level of 1,500 acres over a decade. User created horse and ATV trail uses are expanding and causing erosion and other impacts that need to be addressed.

A total of 845 acres of severely eroded low site index lands in poor watershed condition were fertilized. 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 is on track and close to the planned level of 8,000 acres over a decade.

No projects were implemented in 2006 to improve or restore structural diversity and composition within riparian corridors specifically. Work continues to be done in association with environmental analysis for timber sales on and as needed bases.

In 2006, there was some progress toward inventory and documentation of off-trail horse, ATV and other unauthorized ground disturbing uses. Some areas needing treatment because of impacts to soil productivity and water quality were identified. There is an ongoing backlog of work that is increasing in extent due to continuing problems with user-created trails. Stabilizing and/or treating these trails within a year of their being found is our objective but improved funding and other mechanisms may be needed.

The total number of heritage resources sites monitored in 2006 was 47. Vandalism occurred on seven sites, one site was damaged by logging, and three sites were damaged by forest users. Vandals and artifact collectors continue to use metal detectors to search historic sites and remove artifacts. Holes resulting from metal detector use were found at the Orange Hall Plantation and Rose Cottage sites on the Enoree Ranger District. Several looting holes were dug on prehistoric sites at Linkay Creek and the school dump site at De la Howe on the Long Cane Ranger District.

Several heritage sites are being damaged by water erosion along the shoreline of Strom Thurmond Lake on the Long Cane Ranger District. Unauthorized use of woods roads, ATV trails, horseback riding and bike trails are causing erosion and disturbance on some sites. Other sites were disturbed by a motorcycle enduro trail on the Long Cane Ranger District. An unauthorized campfire and campsite did minimal damage to Key Cemetery and a cemetery site received some damage from logging. Plowing of wildlife fields is damaging some sites and exposing artifacts for illegal collection.

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

Timber offered for sale in FY 06 (all management prescriptions) was 6.0 million cubic feet (MMCF), up from 3.7 MMCF in FY 05. Most of the timber offered was in management prescriptions other than 10B-High Quality Forest Products (Piedmont Only). The seedtree silvicultural system was the method most used to naturally regenerate stands.

An Equestrian Analysis of the Francis Marion and Sumter National Forest was conducted in FY06. The purpose of the project was to assess existing equestrian facilities on the Forests to identify a configuration that meet the needs of the public and is financially sustainable. The conclusions reached from the study indicate that the Forests appear best suited for day-use equestrian opportunities. Overnight equestrian use and facilities appears to be well-served by both private and other public operators.

Implementation of Phase I of the Forks Area trail system was also completed in FY 06 on the Long Cane Ranger District. This project was a result of public demand for more mountain biking experiences on the Forests. This project was identified as a need in several statewide and regional assessments, as well as in the FY 02 Forest-wide Trails Strategy. This facility is located within 15 minutes out of the Augusta, GA-Aiken/North Augusta, SC metropolitan areas, one of the fastest growing regions in the United States.

Approximately 734 miles of system roads were maintained and 3.6 miles were reconstructed. The total miles of system road is 1,062, up slightly as a result of new land acquisitions. No system roads were constructed. Decommissioning of system roads had remained relatively steady for the past few years, but no roads were decommissioned in FY 06 due to funding. The Forest will be looking to shift some road miles into a lower maintenance level in the future due to reduced maintenance budgets.

The road program continues to emphasize the reconstruction of roads to meet the intended traffic volumes safely and lessen impacts to forest resources. Road designs emphasized mitigating negative impacts to resources with the focus on watershed health. Resurfacing and culvert replacement occurred primarily with timber sales. Timber road mileages increased slightly with more harvest activity, while road reconstruction continued to decrease with a significant road program budget reduction.

The Forest continued to conduct road condition surveys to access the backlog of deferred maintenance. These road condition surveys yielded better data, resulting in a slight increase and shift in mileage between levels. The current updated survey focused on the primary open roads classified as maintenance level 3, 4 and 5. The deferred maintenance on these 610 miles of open roads was estimated at \$ 21,616,320.

No land was acquired on the Sumter national Forest during this fiscal year due to budget.

## **Chapter 1. Introduction**

The Sumter National Forest is 364,704 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. Collection of baseline information on condition of rare communities is ongoing. Basic mesic cove communities at Enoree River Bluffs on the Enoree, Johns Creek and the Turkey/Stevens Creek Corridors on the Long Cane, and Station Cove, Station Mountain Cove, Brasstown Creek and Brasstown Falls, and Tamassee Creek on the Andrew Pickens were all monitored. Chinese privet, Japanese honeysuckle, and autumn olive were noted at Johns Creek, Turkey/Stevens Creek, and at Tamassee Creek.

Recreational impacts to rare communities were observed at Station Cove, Tamassee Creek and Brasstown Falls. The South Carolina Native Plant Society, Forest Service and South Carolina Parks, Recreation and Tourism (SC PRT) entered into a challenge cost share agreement to improve trails and provide additional resource interpretation at Station Cove.

2. Approximately 24 acres of Chinese privet and autumn olive were treated at Tamassee Creek, and 20 acres of Chinese privet were treated along the Turkey/Stevens Creek riparian corridor in partnership with the Student Conservation Association (SCA).

##### Findings

1. Non-native invasive plants continue to be a threat to rare communities (including canebrakes) along riparian corridors on the piedmont.

2. 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 2006 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. 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 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 will remove non-native loblolly pine trees. The Ross Mountain/Tamassee project is another loblolly pine removal project that proposes treatments in another 307 acres of loblolly pine plantations. Change in forest types has not been made in the vegetation database yet.
2. Approximately 207 acres of woodland habitat development are planned on the Andrew Pickens Ranger District; 447 acres are on the Enoree Ranger District, and 964 acres on the Long Cane Ranger District. These projects should be entering the implementation phase in the next several years.
3. Queries on the GIS database gave the following status of dry-mesic oak, oak-pine and pine-oak forest communities on the Forest (Objective 8.03.)

**Table 2.1 Acres in Loblolly/Virginia Pine and Oak Types**

	Loblolly and Virginia Pine	Oak Types
All piedmont	207,945	53,795
9.G.2*	32,101	9,518

\*9.G.2 – Restoration of Upland Oak-Hickory and Mixed Pine-Oak-Hickory Forests

Activities to increase oak types on the piedmont include 886 acres of commercial thinning in Management Prescription 9.G.2. - Restoration of Upland Oak-Hickory and Mixed Pine-Oak-Hickory Forests. A total of 2,482 acres of stands to be commercially thinned were sold, and 209 acres were precommercially thinned (including the 9.G.2 areas above) in FY 06. 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 2006 to create gaps or alter major forest communities or conditions (See Objective 8.05).
7. Technical report, “*Population Trends and Habitat Occurrence of Forest Birds on Southern National Forests, 1992-2004*” indicates the mean observations per count for the following MIS species in Table 2-2.

**2-2. Trends in Mean Observations per Count by Physiographic Region**

Species	Physiographic Area*	
	Southern Blue Ridge	Southern Piedmont
Acadian Flycatcher	declining	increasing
Brown-headed Nuthatch	level to slightly declining	increasing
Pine Warbler	declining	declining
Hooded Warbler	declining	declining
Scarlet Tanager	slightly increasing	increasing

\*Andrew Pickens Ranger District is in the Southern Blue Ridge and the Enoree and Long Cane Ranger Districts are in the Southern Piedmont physiographic area.

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. We are finding very few areas of size to allow conversion to shortleaf pine. Shortleaf pine needs good soil depth (approx 8”+ topsoil) with well-drained to moderately well-drained soils. 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 in FY 06.
6. The Andrew Pickens Ranger District is proposing a project to meet Objective 8.05. The project is to create canopy gap, and to release soft and hard mast tree species to benefit wildlife.

7. Declines in MIS populations in the Southern Blue Ridge physiographic area reflect lack of open pine stands and dense midstory and understory canopies. Canopy gaps and understory treatments that include use of prescribed fire are needed to maintain and develop desired conditions. Increases in some bird counts are likely due to large forested blocks where oaks are common.

Declines in MIS populations in the Southern Piedmont physiographic area reflect the overstocked conditions in pine forests. Even though prescribed burning is fairly widespread across the piedmont, high stand densities and lack of canopy gaps are preventing desirable understory shrubby layers from developing.

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 are presented in Table 2-3.
2. No information was collected on the old growth resource in 2005-2006.
3. Technical Report, *Population Trends and Habitat Occurrence of Forest Birds on Southern National Forests, 1992-2004* (General Technical Report NRS-9) indicates the mean observations per count for the following MIS species: prairie warbler, Swainson's warbler, and field sparrow. Information for American woodcock comes from the Southern Forest Resource Assessment.

Prairie warblers are declining across both the Southern Blue Ridge and Southern Piedmont physiographic areas. This species is an indicator of early successional habitat and in particular, open woodlands. Similarly, field sparrows are indicators of grassy woodlands and are frequently associated with early successional habitat.

Swainson’s warbler is also declining in the Southern Blue Ridge physiographic area and is closely tied to early successional habitat. Breeding territories for Swainson’s warbler encompasses forested areas with high stem densities with little ground cover (regeneration areas). Generally speaking, habitat on the Andrew Pickens District consists mostly of mature hardwoods, pines and mixed pine/hardwoods stands that are in the middle to late age categories (greater than 60 years old). Very little habitat is in an early successional stage across the District, and only minimal activity is planned.

American woodcock have been declining throughout the mid-Atlantic area and are commonly associated with riparian areas. Declines are largely attributed to increased urbanization, fragmentation of habitat and lack of forest disturbance. Beneficial disturbances would be those that create forest clearings and regenerate hardwood stands.

Findings

1. Refer to Table 2-3 for existing condition assessment.

**Table 2.3. Trends in Early, Mid and Late Successional Habitat by Management Prescription**

Mgt Rx	Total Forested Acres	Successional Stage	AP	EN	LC	Desired Percentage	Actual Percentage
<b>7.E.2.</b>	60,248	Early	109	254	364	4-10	1%
		Mid to Late	9,455	21,397	21,030	50+	86%
		Late	6,899	12,059	11,755	10+	51%
<b>8.A.1.</b>	34,843	Early	313			4-10	1%
		Mid to Late	29,485			50+	85%
		Late	19,096			10+	55%
<b>8.B.2.</b>	7,887	Early		29	97	10-17	2%
<b>9.A.3.</b>	11,000	Early		0		4-10	0%
		Mid to Late		10,199		50+	93%
		Late		4,205		10+	38%
<b>9.G.2.</b>	42,991	Early		503	227	4-10	2%
		Mid to Late		20,962	14,516	50+	83%
		Late		9,140	9,070	10+	42%
<b>10.B.</b>	136,503	Early		1,168	1,588	10-17	2%
		Mid to Late		61,069	48,654	20+	80%
		Late		37,535	29,622	10+	49%

Woodland habitat projects are in the implementation stage on the Long Cane Ranger District with the RENEW project located in the Lick Fork Lake Area. A similar woodlands project (with multiple cooperators) is being implemented on private land adjacent to the Enoree Ranger District. Woodland habitat creation is planned in the Indian Creek/Lower Enoree watersheds on the Enoree Ranger District. Woodland habitat

will be maintained with a combination of vegetative treatments that include manual, mechanical, herbicide and prescribed fire.

Small scale habitat restoration projects are in the planning stages on the Andrew Pickens Ranger District with loblolly removal in the Ross Mountain/Tamassee area and a project specifically designed to create canopy gaps and enhance hardwood hard mast for wildlife. Upper Chauga and Cedar Creek projects are being implemented and focus on removing non-native loblolly pine. These projects will create short term early successional habitat.

2. No information was collected on existing old growth in FY 06.
3. Early successional habitat, particularly woodland/savanna habitat is in short supply across all Districts of the Sumter National Forest. Progress has been made in recent years with increased regeneration harvest in pine stands and with establishment of woodlands and savanna habitat on all Districts.

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. No projects were implemented in 2006 to create wetland habitats, improve or restore mast producing hardwood stands or alter major forest communities or conditions.
2. Data to estimate trends remain in transition as the new Regional database is still under construction.
3. No data were collected relative to trends in hard mast production capability.

#### Findings

1. Wetland habitat development and hardwood restoration activities need to be incorporated into vegetative management projects and other activities on the forest. A project specifically designed to create canopy gaps and enhance hardwood hard mast for wildlife is in the planning stages on the Andrew Pickens Ranger District.
2. Pileated woodpeckers are a primary indicator of large snag habitat. They also are a good indicator of older forests that have mixtures of live hollow trees and dead trees. Technical Report, *Population Trends and Habitat Occurrence of Forest Birds on Southern National Forests, 1992-2004* (General Technical Report NRS-9) indicates the mean observations per count for pileated woodpeckers are increasing on the Andrew Pickens Ranger District and declining on the two Piedmont Districts. The increasing trend in the mountains most likely reflects the large number of pine snags that were created during past southern pine beetle out breaks from 2001- 2003. Larger dead trees and older forest habitat on the two piedmont districts are in short supply and mainly occurs in riparian areas.
3. No assessment of hard mast has been done across the Forest. Extensive hardwood habitat is found along riparian areas.

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.

2. Stream fish inventory and monitoring sampling in Sumter National Forest streams were conducted in 2002-2005 for all the Districts (refer to the 2005 Monitoring Report).

Only the Andrew Pickens District had fish survey sites evaluated in 2006. A total of 16 streams were sampled (Table 2-4). Several streams have been sampled to determine the distribution of trout. A total of 27 species have been captured in both cool and cold water habitats (Table 2-5).

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

Stream	Site #	Watershed	Quad	# Species Captured				
				2002	2003	2004	2005	2006
Chauga River	2	Chauga River		10		10		
Chattooga River			Whetstone					
Big Bend Site		Chattooga River						11
Ellicott Rock Site		Chattooga River	Tamassee					12
Spoonauger Site						14		
East Fork Site						9		
Pigpen Branch	1	Chattooga River	Tamassee	3	3			
	2		Tamassee	2	3			
Tamassee Creek	1	Chattooga River		9	9			
	2		Tamassee		5			
Crane Creek	1	Cheohee Creek		1		1		1
	2		Tamassee			1	1	1
Jacks Creek	1	Chattooga River			1			
Townes Creek	1	Cheohee Creek	Cashiers		7			
Yellow Branch		Coneross Creek	Tamassee		4			
Bee Cove Creek		Whitewater River	Walhalla		1			
Howard Creek		Whitewater River	Cashiers		1			
Limber Pole Creek		Whitewater River	Cashiers		1			
Moody Creek		Cheohee Creek	Tamassee		1			
Wilson Creek		Cheohee Creek	Tamassee		0			
East Fork Chattooga River	1	Chattooga River	Tamassee		12			
	2		Cashiers/Tamassee		4			3
	3				3			
King Creek	1	Chattooga River	Tamassee			5	5	
	2			1	1	1	1	1
Fall Creek		Chattooga River	Rainy Mountain			4		

**Table 2.5 Species Captured in Andrew Pickens Ranger District Streams\***

<b>Species</b>		<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b><u>Catostomidae</u></b>						
<i>Catostomus commersoni</i>	White sucker		x			x
<i>Hypentelium nigricans</i>	Northern hogsucker	x	x	x		
<i>Moxostoma rupiscartes</i>	Striped jumprock	x	x	x	x	x
<b><u>Centrarchidae</u></b>						
<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			x
<i>Micropterus coosae</i>	Redeye bass					
<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>Hybopsis rubrifrons</i>	Rosyface chub	x	x			
<i>Luxilus coccogenis</i>	Warpaint shiner		x	x		x
<i>Nocomis leptocephalus</i>	Bluehead chub	x	x	x		x
<i>Notropis lutipinnis</i>	Yellowfin shiner	x	x	x		x
<i>Notropis spectrunculus</i>	Mirror shiner			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	x		
<b><u>Ictaluridae</u></b>						
<i>Ameiurus brunneus</i>	Snail bullhead			x		
<i>Ameiurus platycephalus</i>	Flat bullhead	x				
<b><u>Percidae</u></b>						
<i>Etheostoma inscriptum</i>	Turquoise darter	x	x	x		x
<i>Perca flavescens</i>	Yellow perch	x				
<i>Percina nigrofasciata</i>	Blackbanded darter	x		x		
<b><u>Salmonidae</u></b>						
<i>Oncorhynchus mykiss</i>	Rainbow trout	x	x	x	x	x
<i>Salmo trutta</i>	Brown trout	x	x	x	x	x
<i>Salvelinus fontinalis</i>	Brook trout	x	x	x	x	x

\*A total of 16 different streams were sampled in 2002-2006.)

Of the 27 species 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. 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. The 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.

Most species captured in these streams are classified as intermediate in their tolerance to human influences, adept at exploiting particular types of disturbances. 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 inventories were not conducted in 2006.
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.

### Findings

1. Inventories of benthic macroinvertebrate, crayfish and mollusk communities need to be accomplished.
2. Sixteen streams have been inventoried across the mountains, and repeated samples have been conducted in seven of those streams. Twenty-seven species have been captured across the Andrew Pickens Ranger District. 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.
3. No findings to report for habitat inventories in FY06.
4. A portion of King Creek has been modified and is providing quality brook trout habitat.

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. Surveys for the federally endangered Carolina Heelsplitter were conducted on Duncan Creek on the Enoree Ranger District and on Turkey Creek and its headwaters on the Long Cane Ranger District in fiscal years 2005 and 2006. Occurrences of eight live and one dead heelsplitter were found in the Upper Turkey Creek sub-basin on the Long Cane. No listed mussel species were found on the Enoree.

Surveys for Georgia aster were conducted on the Long Cane Ranger District, and over 1,700 plants from 45 new locations, all along roadsides or powerline rights-of-ways, were found.

One of the two populations of the sensitive leadplant (*Amorpha schwerini*) on the Sumter National Forest was monitored. Less than one percent of the population had flowered, although 120 plants were seen from 3 colonies.

The two populations of the sensitive nodding trillium were monitored in 2006. One population from the Enoree consists of over 400 plants, and the other population from the Long Cane consists of over 200 plants.

A smooth coneflower population planted at Long Nose on the Andrew Pickens in October 2004 was monitored, and 190 plants (of which 27% were flowering) were located out of 331 that had been planted.

A decision to improve habit for the sensitive sun-facing coneflower (*Rudbeckia helipsidis*) was completed on the Andrew Pickens Ranger District.

**Table 2.6 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 occur within one site on the Long Cane
<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>	Sensitive	Conserved in waterfall spray communities on the Forest
<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 Loosetrife</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>	Sensitive	Conserved in waterfall spray communities on the Andrew Pickens
<b>A Liverwort</b>	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>	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

Most Federally listed species occurring on the Forest, including bald eagle, wood stork, Carolina heelsplitter, and Florida gooseberry, appear to be stable based on population and habitat monitoring data. Neither relict trillium nor persistent trillium are known from the Sumter, but habitat does occur there, and populations are known in proximity to the National Forest boundary.

Smooth coneflower is increasing in Oconee County and close to achieving recovery objectives. However, continuous active management such as prescribed fire, midstory control, or thinning is needed to perpetuate self-sustaining populations in Oconee County.

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. The populations on the Andrew Pickens do not meet recovery objectives for the species.

## Findings

1. 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 Ranger District; the smooth coneflower, occurring on the Andrew Pickens Ranger District; and Georgia aster, a candidate for federal listing, occurring on both the Enoree and Long Cane Ranger Districts. Habitat for each of these species is being managed to promote recovery and/or

the prevention of federal listing. Investigation of 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, 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. In general, turkey reproduction in 2006 was poor due to inclement weather during brood-rearing season. Deer harvest estimates continue to be relatively stable from previous years. Black bear populations are increasing, (SCDNR harvest records for 2006) and their range is expanding in the South Carolina mountains.
2. Bobwhite quail numbers continue to show declines statewide but appear to have stable to upward trends on portions of the piedmont on the Enoree and Long Cane Ranger Districts.

Turkey populations have declined in both the Southern Blue Ridge and Southern Piedmont physiographic regions. Key habitat components for the species are mature hardwood bottoms, scattered openings, and open uplands that are maintained with prescribed fire. Early successional habitat including woodlands is in very limited supply across the Districts. Turkey populations are closely associated with brood-rearing habitat.

Black bear habitat has tripled in the mountains and the population is increasing.

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. Grass carp have also been stocked for aquatic plant control.

Pond habitat enhancement work was discussed in the 2005 Monitoring Report. No additional work was accomplished in FY 06.

### Findings

1. Continued effort on the Forest is needed to establish and maintain woodland and savanna habitats. Emphasis should be placed on developing and maintaining escape cover for black bear. Most producing hardwood restoration activities need to be incorporated into vegetation management projects on the Andrew Pickens Ranger District.
2. Stable to upward trends for quail habitat on the piedmont likely reflects fire-maintained forests. Early successional habitat woodland habitat is being developed but is still less than one percent on the Districts. Continue emphasis needs to be placed on thinnings, woodland habitat creation, regeneration harvest and use of prescribed fire.

As with quail, turkeys will benefit from projects that increase early successional woodland habitat, thinnings and prescribed fire that keeps understories open. This should improve and increase brood-rearing habitat as well.

The upward trends on black bear and its habitat reflect the amount of mature to old habitat on the Andrew Pickens Ranger District.

3. Ponds will 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 wildlife 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 2006, 21,788 acres were prescribed burned on the Sumter. This is up from the 2005 total of 17,456 acres.
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.
3. Prescribed fire on the Sumter National Forest continues to be the most important Forest Service activity impacting air quality, since it releases fine particles into the atmosphere which can affect human health, safety and visibility conditions. Fine particles (referred to as PM<sub>2.5</sub>) are defined as particles suspended in the air that are 2.5 micro meters or smaller in diameter. The amount of fine particulate matter released into the atmosphere by prescribed fire in 2006 was higher than the previous year, reflecting the increase in acres treated (Table 2-7).

The four PM<sub>2.5</sub> monitoring sites closest to the Forest recorded decreases in 24-hour fine particulate concentrations from 2004 and 2005 levels and annual average concentrations similar to previous years. These results indicate that even with increased emissions from prescribed fire, the NAAQS for fine particulate (PM<sub>2.5</sub>) were not exceeded.

Prescribed fire also emits smaller amounts of nitrogen oxides, which can contribute to increases in ground-level ozone. The other Forest Service activity that releases nitrogen oxides is vehicle use. The five ozone monitors within or near the Forest continue to show levels well below the NAAQS, again demonstrating that Forest Service activities are not contributing to unacceptable levels of air pollution (Table 2-9).

**2-7. Fine Particulates (tons per year)**

FY03	FY04	FY05	FY06
423	804	799	976

**Table 2-8. Summary of Fine Particulate (PM<sub>2.5</sub>) Data (2004-2006)\***

Location	Site ID	2004	2004	2005	2005	2006	2006	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	36	13.1	35	13.6	28	13.6	33	13.4
Greenwood County, SC	450470003	30	13.4	32	14.1	27	14.1	30	13.9
Oconee County, SC	450730001	23	10.4	33	11.5	28	11.6	28	11.2
Richmond County, GA**	132450091	36	15.6	31	16.1	31	16.5	33	16.0

\* 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.

**Table 2-9. Summary of Ozone Data\***

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

\*The ozone standard is violated if the 3-year average of the fourth highest 8-hour average ozone concentration is 0.085 ppm or higher.

4. In FY 2006, 2,702 acres of commercial thinning were offered for sale.
5. The Sumter National Forest treated 103 acres in 2005 for non-native invasive species including kudzu, Chinese privet, Chinese wisteria and autumn olive. In 2006, 650 acres were treated including 225 acres on the Andrew Pickens, 400 acres on the Enoree, and 25

acres on the Long Cane. The Sumter National Forest hosted an Invasive Species Project team working with the Student Conservation Association.

An inventory of areas 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, Oswalt found that 72% of the plots sampled in the piedmont and mountains combined contained at least one non-native species (Sonja N. Oswalt, 2005). Japanese honeysuckle was the most common non-native invasive species (32%) and Chinese privet the second most common (11%).

## Findings

1. Prescribed burning on the Forest in 2006 was just short of the annual objective of 23,600 acres per year set by the Forest Plan. 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 are 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. Fine particles in the atmosphere can reduce visibility, and they also can increase the risk of heart attacks or respiratory problems for people. It should be noted that sulfates are the primary type of fine particulate matter measured in rural areas of the eastern United States, and the majority of sulfates are emitted from electrical power generation facilities.

Ground-level ozone can also have an adverse impact to people's health. Monitoring results for both of these pollutants indicate that air quality in the vicinity of the National Forest is below the NAAQS and therefore in attainment status.

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 April 2010. Based on the data shown in Table 2-8, it appears that all monitors around the Sumter National Forest will remain in attainment of the PM<sub>2.5</sub> standards.

4. The Sumter is making progress in achieving objective 17.01 (improving forest health by reducing stand densities).

5. Control of non-native invasive plant populations on the Districts is ongoing. Emphasis needs to be placed on monitoring treated areas to determine effectiveness of control.

### **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 35 acres were treated to improve soil and water conditions. This included restoration of a gully in compartment 73 on the Enoree Ranger District that included stabilization for erosion control and site reshaping. Work was also done on user-created trails and native grass seed production areas. Native grasses are used for erosion control on treated gullies, trails and other exposed areas. This level of implementation is substantially below the plan level of 1,500 acres indicated in Objective 1.01 acres over a

decade. There continues to be areas needing treatment. User-created horse and ATV trails are expanding and causing erosion and other impacts that need to be addressed.

3. A total of 170 acres of severely eroded, low site lands were fertilized using soil and water funding (NFVW) and 675 acres with sale area improvement (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 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. No funding was allocated to this task.

### Findings

1. BMP compliance checks by the South Carolina Forestry Commission have been slowly developing into a regular activity. Assistance from the Forest soil and water specialists and personnel from the Districts occurs, when possible, to help in the evaluation. Special attention should be placed on ground disturbing practices that occur in sensitive soil areas, wetlands, and riparian corridors. Also monitoring should occur when ground disturbing activities are concentrated over large areas of the landscape or within specific drainage areas. An agreement with the SC Forestry Commission (SCFC) has been formalized to conduct BMP checks and determine consistency when requested. In addition, interaction and cooperation to address non-point source pollution and BMPs are part of the Memorandum of Understanding amount the SCFC, SC Department of Health and Environmental Control and the USFS. The SCFC continues to provide group training of forest and technical staff on BMPs when requested. We intend to continue to pursue both the field and office interaction between the state BMP foresters and USFS personnel on the Sumter NF.
2. Only 23% of the 150 acre annual average soil and water improvements were funded under Objective 1.01. This was an increase over 2005, but is substantially below the Forest Plan level needed to meet goals and what has historically been accomplished toward the watershed improvement backlog.

System trail maintenance has increased, and new designated trails are better designed. Trails are now closed for wet weather or other damaging conditions. This also reduces maintenance costs and resource impacts. Overall, system trails are in better condition and environmental impacts have been reduced.

3. Authorizations under the Wyden Amendment provide a mechanism to correct adverse impacts to soils, water and aquatic habitats from private lands.
4. Attention to water rights and in-stream flow methodologies and determination is needed to be consistent with Forest Plan direction in the future (Goal 2, Objective 2.01). For the

last several years, developing a protocol to fit the Forest was put on hold due to other priorities.

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. Project assessments may include: presence of non-native invasive species; amount/distribution of woody debris in streams; active erosion from slopes, gullies, and unstable or eroding stream banks; excessive sediment; fecal coliform; damage from unmanaged recreational uses; and, potential for native species restoration, such as canebrakes.
2. No specific projects were implemented in 2006 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 in 2006.

### 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 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. The first National Visitor Use Monitoring (NVUM) survey was completed on the Forest in FY 02. A new round of visitor use monitoring will again be conducted on the Forests in FY 08.

An Equestrian Analysis of the Francis Marion and Sumter National Forest was conducted in FY06. The purpose of the project was to assess existing equestrian facilities on the Forests to identify a configuration that meet the needs of the public and is financially sustainable. Key questions asked in the study included:

- Where are users located?
- What is the concentration of users in relation to existing equestrian facilities operated by the Forest Service, other public agencies, and private providers?
- How do visitors use the existing equestrian trails and facilities on the Forests?

- What are the preferences of equestrian trails and facility users?

Recommendations were developed regarding:

- The degree to which the current Forest equestrian facilities match the needs and preferences of users;
- The ideal role for the Francis Marion Sumter (FMS) in the provision of equestrian facilities; and,
- How the FMS could better accommodate the needs and preferences of users in the context of market demand and other facilities in the area.

Implementation of Phase I of the Forks Area Trail System was also completed in FY 06 on the Long Cane Ranger District. This project was a result of public demand for more mountain biking experiences on the Forests. This project was identified as a need in several statewide and regional assessments, as well as in the FY02 Forest-wide Trails Strategy. This facility is located within 15 minutes out of the Augusta, GA-Aiken/North Augusta, SC MSA, one of the fastest growing regions in the United States.

An analysis of the Oscar Wigginton National Forest Scenic Byway on the Andrew Pickens Ranger District is planned in FY 07. The information will include an analysis of nature-based recreational experiences presently provided and those that should be provided along the byway and its surroundings.

A review of the two OHV Trails on the Long Cane Ranger District is planned in FY 07. The purpose is to develop recommendations to improve trail alignment, design, and maintenance/reconstruction techniques.

### Findings

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

The Equestrian Analysis referenced above had the following findings:

- The three state area (South Carolina, Georgia and North Carolina) are home to a horse population of more than 350,000. About 34 percent of these horses are used for recreational riding, including trail riding. With the exceptions of Texas and California, the size of the region's (three state area) horse population indicates that it has the potential to generate a greater economic impact on the trail riding market than other similar states.
- The primary South Carolina geographical regions (piedmont coastal and mountain areas) have differing degrees of attraction and seasonality for equestrian users.
- User preferences for facilities depend on the visitors planned activity i.e., day use or overnight.

- Maximum drive time for day users is about three hours each way - just need adequate parking and well maintained trails.
- Overnight users are willing to drive between three and eight hours each way. Users prefer to have a variety of experiences over the course of their stay (i.e., at least 20 miles of trail experience contained within a loop system and developed facilities near the trails that provide comfort and convenience for a longer stay). Overnight facilities must have adequate facilities for securing horses overnight.
- Trail preferences information included type of trail tread surface, safety, scenery, topography, and dependant on the breed of horse (e.g.: gaited versus non-gaited horses).

The conclusions reached from the study indicate that the FMS appears best suited for day-use equestrian opportunities. The South Carolina equestrian overnight use market appears to be well-served by both private and other public operators.

The following are the recommendations from the study:

- The Enoree Ranger District Equestrian Facility should be consolidated.
- There should be a reduction of campsites at Fell Camp on the Long Cane Ranger District.
- Program management should be improved by tracking visitor use, occupancy, number of horses, length of stay, etc.
- Fees should be charged at Woods Ferry and Rocky Gap Horse Trail trailheads.

Finally, implementation of Phase I of the Forks Area Trail System has been well received by the public as demonstrated by positive reviews in numerous newspapers and websites across the southern region and US as a whole. Additionally, trailhead parking is frequently at capacity, particularly on weekday afternoon/evenings.

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. No monitoring of the effects of recreation activities on riparian areas were conducted in FY 06. However, impacted areas were identified during trail and facility condition surveys of equestrian and OHV trails. High priority affected areas were either addressed or brought forward to the Recreation Resource Assessment Team (RAT) for prioritization and funding.
2. Wet weather closures on OHV trails that began in 2004 continue to work well and are serving to mitigate much of the impact these trails have on riparian areas and other natural resources. Plans are in place to conduct a review and analysis of the two OHV trails on the Long Cane Ranger District. The objective of the review is to develop recommendations to improve trail alignment, design and maintenance/reconstruction techniques. The intent is to improve financial accounting, environmental sustainability, and customer satisfaction.
3. Trail maintenance continues to be a high priority for the recreation program on the Forests 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).

In FY 06, an inventory of user created horse trails was conducted on the Sumter National Forest. One of the primary objectives for this exercise was to identify impacts from cross-country (off-trail) equestrian travel on riparian and other natural resources. This information (along with the Equestrian Market Report results) will be used to craft an equestrian strategy for each District on the Sumter. One question to be answered is whether or not equestrian use should occur only on designated routes.

The Recreation Solutions Enterprise Team conducted a comprehensive survey of the Rocky Gap Horse Trail on the Andrew Pickens Ranger District to identify trail locations

that were unsustainable and recommend improved trail alignments. The issue of user-created horse trails was also addressed in the recommendations that came forth in the final report.

A comprehensive bio-physical inventory of the Chattooga National Wild and Scenic River is planned in FY 07.

### Findings

1. Degradation of riparian areas from recreational activities are diminishing over time on the Sumter National Forest. As problems are identified, resources are allocated by priority to address problem areas.
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 Sumter is paying off. Many of the trails are in the best condition they have ever been in. This is especially true of the OHV and equestrian trails where we have put the most maintenance emphasis. 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. The latter have been generally used as match for the grant funds.

An inventory of user-created horse trails was conducted in FY 06 and identified 14 miles on the Enoree, 10 miles on the Andrew Pickens, and 9 miles on the Long Cane. The information was collected using a GPS data dictionary and pictures were used to document critical points/areas in the survey. The data as a whole is presently being used to develop an equestrian strategy for the Forests on a district-by-district basis.

The comprehensive Recreation Solutions Enterprise Team survey and recommendations for the Rocky Gap Horse Trail are also being used in concert with the user-created horse trail information to develop a site-specific strategy for the Andrew Pickens equestrian program.

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 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 integrity (SIO) and recreation opportunity spectrum (ROS) objectives.

## Results

1. Project and field review of ground disturbing activities were ongoing in FY 06. Proposed projects on the Sumter National Forest met the established SIO standards and ROS objectives.

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. No new results to report. Refer to the 2004 Sumter Monitoring Report.

### Findings

1. No new results to report. Refer to the 2004 Sumter Monitoring Report.

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. Issues with unauthorized trails of one type or another and camping are increasing, especially near some streams and rivers. Analysis of bio-physical impacts in the Chattooga River Wild and Scenic River corridor are planned in FY 07.
2. Past monitoring has identified elevated fecal coliform in the lower portions of the Chattooga River below Stekoa Creek. Initial discussions between the Chattahoochee-Oconee National Forest in Georgia and the Sumter National Forest have included increased internal cooperation and expanded coordination with the Chattooga Coalition regarding collection of fecal coliform data.

Little water quality information exists for eligible rivers, so benchmarks or references are not available to help evaluate questions concerning existing conditions or to address changes over time. Indirect measures such as land use and in-stream evaluations could be used to detect changes and to signal the need for more detailed monitoring. Other surrogates such as aquatic macroinvertebrates might also be used to address changed conditions.

### Findings

1. Results of biophysical impacts on the Chattooga River will be presented in the FY 07 Sumter Monitoring Report.
2. Eligible rivers were selected in part because water quality conditions are generally considered of high quality due to the prevalence of forested conditions. The Forest will continue to monitor impacts to water quality including assessing impacts to existing and eligible wild and scenic rivers.

## **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 2-10. Archaeological Sites**

Total number of sites monitored	47
ARPA investigations	0
Other vandalism	7
Damaged by logging	1
Sites damaged by forest users	3
Sites damaged by fire	0
Sites undisturbed	36

Vandals and artifact collectors continue to use metal detectors to search historic sites and remove artifacts. Holes resulting from metal detector use were found at the historic house sites 38UN145 Orange Hall Plantation, 38UN182 Rose Cottage site, and 38NE658 and 38NE660 on the Enoree Ranger District. Several looting holes were dug on prehistoric sites 38MC122 Linkay Creek Site, 38MC440, and on historic site 38MC1873, the De la Howe school dump on the Long Cane Ranger District.

Several sites are being damaged by water erosion along the shoreline of the Strom Thurmond Lake on the Long Cane Ranger District. Unauthorized use of woods roads, ATV, horseback riding and bike trails are causing erosion and disturbance on sites. Sites 38MC887 and 38MC889 were disturbed by a motorcycle enduro trail on the Long Cane Ranger District. An unauthorized campfire and campsite did minimal damage to 38MC252 Key Cemetery. Cemetery site 38CS273 received some damage from logging. 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.

## Findings

1. 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. Site management plans should be written for priority heritage assets and significant threatened 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 0.6 MMCF of forest products for sale in management prescription 10B in FY 06. Total Sumter offer (all management prescriptions) in FY 06 was 6.0 MMCF.
2. The roads constructed, reconstructed and maintained are shown in Table 2-11.

**Table 2-11. Road Activities**

<b>Activity</b>	<b>Unit of Measure</b>	<b>FY 04</b>	<b>FY 05</b>	<b>FY 06</b>	<b>10 Year Plan Estimate</b>
<b>Road Construction</b>	Miles	0.0	0.0	0.0	9.0
<b>Road Reconstruction</b>	Miles	12.5	4.3	3.6	342.0
<b>Timber Roads</b>	Miles	16.3	20.0	28.1	N/A
<b>Roads Decommissioned</b>	Miles	5.2	5.5	0.0	0.0
<b>System Mileage</b>	Miles	1,047	1,059	1,062	N/A
<b>Roads Maintained</b>	Miles	831	782	734	8,450

3. The annual budget is shown in Table 2-12.

**Table 2-12. Francis Marion and Sumter National Forests Budget**

<b>Activity</b>	<b>Unit of Measure</b>	<b>FY 03</b>	<b>FY 04</b>	<b>FY05</b>	<b>FY06</b>	<b>10 Year Plan Estimate</b>
*Annual Budget	MM\$	14.6	14.1	10.8	10.6	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.

4. In 2000, Congress passed legislation to make up for the reduction in timber sales receipts that counties received from the Federal government. The Secure Rural Schools and Community Self-Determination Act gave local communities a choice of how they were to be paid. The 11 counties on the Sumter National Forest chose the full payment option, and the FY 2006 payments are displayed in Table 2-13.

**Table 2-13. Returns to Counties in FY 2006**

<b>County</b>	<b>Returns</b>
<b>Abbeville</b>	\$151,528
<b>Chester</b>	\$80,902
<b>Edgefield</b>	\$202,363
<b>Fairfield</b>	\$72,357
<b>Greenwood</b>	\$69,870
<b>Laurens</b>	\$136,819
<b>McCormick</b>	\$320,687
<b>Newberry</b>	\$369,791
<b>Oconee</b>	\$522,293
<b>Saluda</b>	\$28,554
<b>Union</b>	\$391,530

### Findings

1. Most of the timber offer in FY06 was in management prescriptions other than 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. Road designs emphasized mitigating negative impacts to resources with the focus on watershed health. System road projects associated with timber sales were mainly for resurfacing and culvert replacement. Timber road mileages increased slightly with more harvest activity while road reconstruction continued to decrease with a significant road program budget reduction. No new roads were constructed in FY 06.

The Forest continued to conduct road condition surveys to access the backlog of deferred maintenance with the focus on primary open roads classified as maintenance level 3, 4, and 5. Road condition surveys resulted in a slight increase and shift in mileage between maintenance levels. The deferred maintenance on these 610 miles of open roads was estimated at \$ 21,616,320.

Road mileage continued to increase slightly due to new land acquisitions and updated road lengths from condition surveys. Decommissioning of system mileage had remained relatively steady for the past few years but no roads were decommissioned in FY 06 due to other funding requirements. The forest will be looking to shift some road miles into a lower maintenance level in future years due to reduced maintenance budgets.

3. The Forest budget has declined slightly in the last few years but is down sharply from earlier in the decade.
4. 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 we will have opportunities to review them in the field to determine if desired conditions are being achieved and if standards are adequate to protect resources.
2. No lands were acquired in 2006 due to budget.

### Findings

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

### Chapter 3. FY07 and 08 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:** Collection on the condition of rare communities on the Forest continues to be collected annually

-----  
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 2006 to create gaps. However, a project is planned on the Andrew Pickens Ranger District.

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

**Responsibility:** Forest biologists

**Date:** FY 2008

**Status:** Data has been entered and analysis can be done at the Regional and Forest level but information is currently not available at the District level. No further action will be taken. Emphasis will be placed on getting access to the information by Districts to use in project planning.

-----  
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:** FY08

**Status:** Scott Creek on the Long Cane Ranger District is in the planning stages and is aimed at creating wetland habitat. Most vegetation management projects include release and site-preparation treatments to favor desirable hardwood species (ie. oaks and hickories).

e) **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:** FY08

**Status:** Effectiveness of non-native invasive species treatments and a desired condition for each site are determined prior to treatment.

-----  
f) **Action:** NVUM needs to redone every 5 years.

**Responsibility:** Forest Landscape Architect.

**Date:** FY07 and 08

**Status:** Last inventory completed in FY 2002.

-----  
g) **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.

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

**Responsibility:** Districts and SO.

**Date:** FY08

**Status:** Planning stage

-----  
**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
John Cleeves	Forest Planner
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
Charlie Kerr	Fire/Aviation Management Officer
Joel Harrison	GIS Specialist
Cindy Huber	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 2006 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 Monitoring and Evaluation Annual Report:

---

---

---

---

---

---

---

---

“The US Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, disability, political beliefs, sexual orientation, or marital or family status. (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 USDA, Directive, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.”

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Mail this form to: John Cleaves  
USDA Forest Service  
4931 Broad River Road  
Columbia, South Carolina 29212