National Forests in North Carolina

FY 2005 Monitoring and Evaluation Report

Nantahala * Pisgah * Uwharrie * Croatan

Hurricane Damage – September 2004

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PREFACE

Forest plan monitoring and evaluation reports are essential elements for maintaining valid, effective and implementable Land and Resource Management Plans (Plans). Nantahala and Pisgah National Forests (N/P Forests) operate under an LRMP signed in 1987 and significantly amended (Amendment 5) in 1994. Revision of this plan is set to begin no earlier than FY 2009. The LRMP for Uwharrie was signed in 1986 and is currently in revision. The Croatan National Forest LRMP revision was signed in FY 2003. The various Plans are available online at http://www.cs.unca.edu/nfsnc/nepa/nepa.htm.

The Annual Monitoring and Evaluation Report for FY 2005 is organized into broad resource topic areas. A summary of the historical context for management of the four Forests is available online at http://www.cs.unca.edu/nfsnc/me2003/nfsnchistory.pdf.

The organization of the Monitoring Results for FY 2005 presented here broadly follows three main emphasis areas of the Government Performance and Results Act (GPRA) as outlined in the USDA Forest Service Strategic Plan (2000 Revision). Those emphasis areas are Ecosystem Health, Multiple Benefits to People, and Effective Public Service. See http://www.fs.fed.us/plan/.

KEY FINDINGS AND CERTIFICATION

- A major focus for the Forest during FY 2005 was responding to impacts of four hurricanes that occurred in September 2004. Massive flooding impacted streams channels, roads, trails, and facilities across Nantahala and Pisgah National Forests through scouring, slides, washouts, and fallen trees. Great progress was made during 2005 and efforts continue FY 2006.

- The Forest began implementation of a multi-year effort to combat the hemlock woolly adelgid across the landscape using a combination of pesticide and predator beetles. Early anecdotal observations indicate this approach is achieving some success at sites where it is underway.

- In FY 2005, $1,031,536.40 collected in user fees helped to fund numerous recreation projects.

- Timber sold in FY 2005 more than doubled over what was sold in FY 2004. Trend information for timber harvesting over the past 18 years indicates the downward trend that began in the late 1980's has bottomed out and is slowly climbing. Still, for 2005, acres receiving some type of harvest were only 33% of what was anticipated in the Plans, and the volume of timber removed much less than the amount anticipated in the plans, in part due more acres being thinned and fewer regenerated.

Storm Damage to Trail

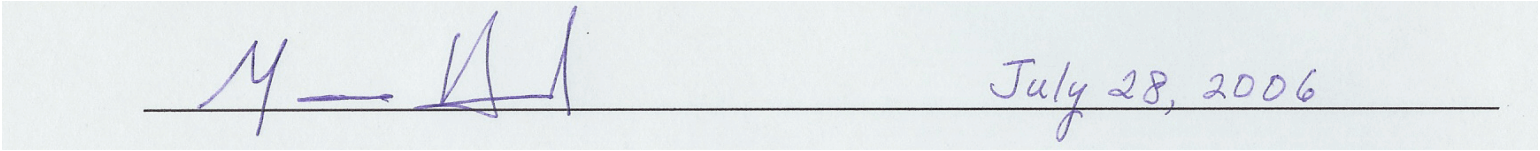
- Hurricane recovery efforts identified 38 damaged archeological sites that required salvage excavations and stabilization. In addition, compliance surveys of 1750 acres in support of storm recovery projects identified 99 new sites.

Forest Supervisor's Certification

I have evaluated the monitoring results and I have directed that the Action Plan 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.

During FY 2006, the Plan for Nantahala and Pisgah National Forests and the revised Croatan National Forest Plan are sufficient to guide forest management for FY 2006 on those Forests. For the Uwharrie National Forest Plan Revision is proceeding in FY 2006.

Any amendments or revisions to the Forest Plans will be made using the appropriate National Environmental Policy Act (NEPA) procedures.



Forest Supervisor Date

FY 2005 Monitoring Results

Monitoring Results Related to Ecosystem Health

SPECIAL REPORT – HURRICANES DAMAGE

In September 2004, the National Forests in North Carolina felt the effects of Hurricanes Charley, Frances, Ivan and Jeanne.

In less than a month the hurricanes flooded the forest with more than 30 inches of rain. Roads, bridges and trails were washed out; recreation facilities were damaged; rock and landslides changed mountain faces; watersheds and fisheries were damaged; and streams and rivers changed paths and filled with debris. The Pisgah and Nantahala National Forest in the mountains of western North Carolina were the hardest hit.

The National Forests in North Carolina received a $47.2 million supplementary appropriation for storm recovery.

Soil nailing on the Licklog Road Grandfather Ranger District

Emergency Supplemental Appropriations for Hurricane Disasters Assistance Act, 2005		
Resource Area	**Allocation**	**Percent Used**
Facilities (CMFC)	$7,450,000	82
Trails (CMTL)	$5,295,000	70
Roads (CMRD)	$27,000,000	80
Landlines (NFLM)	$376,000	101
Recreation/Heritage (NFRW)	$1,200,000	88
Timber (NFTM)	$55,000	93
Water/Soils (NFVW)	$5,000,000	67
Fisheries (NFWF)	$750,000	57
Hazardous Fuels (WFHF)	$48,000	72
Preparedness (WFPR)	$36,000	102
Total	**$47,210,000**	**77**

The Forest's highest priority was to protect and restore watersheds and provide for public safety. Attention was directed towards repairing high-use areas first.

Strategy

The Forest Service organized an incident command team to coordinate and monitor the recovery effort.

A pool of contractors was developed to help complete some of the priority projects within a shorter timeframe. Local contractors are completing most of the contract work.

Most assessments and designs are expected to be finished by spring of 2006. The Forest Service is striving to have all of this work completed or under contract by September 2006.

Accomplishments

- ✓ About 900 detailers from across the country worked on storm recovery alongside Forest employees from the National Forest in North Carolina
- ✓ All major recreation sites opened by Memorial Day weekend 2005.
- ✓ Contracts totaling $900,000 were awarded for Davidson River and Cove Creek roads on the Pisgah District. These roads were re-opened in the Fall of 2005.
- ✓ The lower section of the South Toe River Road is now open. Significant work remains on the upper section from Black Mountain Campground to the Blue Ridge Parkway. Repairs to this section are estimated at $1,300,000 and should be completed by Fall 2006.
- ✓ The Forest worked with National Park Service personnel to complete major trail repairs in the popular Graveyard Fields area off the Blue Ridge Parkway south of Asheville.
- ✓ A contract was finalized with the Cherokee Nation for a variety of storm work including trail relocation, saw work, fisheries, rehabilitation, planting and seeding.

Summary of Damage and Repairs

Resource	Initial Impact	Accomplishments in 2005
Roads	1,768 miles assessed, 1,050 miles with significant damage.	1000 Miles Cleared and/or Repaired; 160 Miles under Contract; 214 Miles In Design
Road Bridges	17 Bridges Damaged or Destroyed	3 Bridges Repaired, 4 In Progress
Trails	1103 Miles of Trails Damaged	885 Miles Repaired or Cleared, 122 Miles Currently Under Repair
Trail Bridges	56 Trail Bridges Damaged or Destroyed	31 Bridges Designed and Ready for Contracting
Administrative Facilities	19 buildings damaged	12 Building Repairs Completed
Landlines	20 Sites with Monuments Damaged or Destroyed by Floods	14 Land Survey Contracts Awarded to Re-establish Landlines and Monuments
Recreation Sites/Facilities	81 facilities damaged	44 Recreation Sites Completed, 18 Sites Currently Under Repair
Heritage Sites	108 sites assessed	84 Sites Completed, 22 Sites in Progress
Watersheds/Landslides	148 Watershed and Landslide Projects Identified	72 Projects Completed, 7 Under Repair
Fisheries	71 projects identified	56 Projects Completed, 1 Under Repair

ECOSYSTEM DIVERSITY

Goal or Desired Condition: Maintain, and where possible, enhance the diversity of plant and animal communities.

<table>
<tr><th>Monitoring Item</th><th>Results</th></tr>
<tr><td>Creation of early successional habitat</td><td>
<table>
<tr><th>Regeneration/Early Successional Habitat Created in FY 2005 (acres)</th><th>Desired Annual Amount Established per Plans (acres) (approximation)</th></tr>
<tr><td>Croatan 79 (planted)
Nantahala/Pisgah 1,291 (regeneration)
Uwharrie 32 (regeneration)</td><td>Croatan 1550
Nantahala/Pisgah 1560
Uwharrie 400</td></tr>
</table>
</td></tr>
<tr><td>Status and management of major forest pests and diseases

 
Predator beetle eating hemlock woolly adelgids</td><td><u>Hemlock Woolly Adelgid:</u> The first detection of hemlock woolly adelgid (HWA) on the Pisgah and Nantahala National Forests was made in FY 2001 after several years of monitoring. In FY 2004 hemlock mortality became apparent, especially in Graham County and the Linville Gorge. Chemical treatments to combat the adelgid occurred in numerous developed recreation areas and administrative sites. Experimental releases of beetles that prey on adelgids also occurred. The prognosis is poor without a significant ramping up of treatments and predator beetle releases. The Forest identified the need for a Forest-wide Environmental Assessment (EA) for treating HWA across the landscape. Completion of the EA and beginning of implementation of that project began in FY 2005. Of 72 sites selected for evaluation on the Pisgah National Forest, 5 were heavily infested, 16 were moderately infested, 18 were lightly infested, 12 were not infested, and 2 were in decline from infestation. The remaining sites were relocated due to inaccessibility or lack of hemlock. Predator beetles were released at 21 of these sites, and insecticides treatment was used at 12 sites. Initial anecdotal reports indicate good success from both methods in reducing HWA frequencies.</td></tr>
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Monitoring Item	Results
	Non-native Invasive Plants: In 2005 management of invasive exotic species were conducted across 3 of the 7 mountain ranger districts. Specific control projects across 33 acres were directed at outbreaks of oriental bittersweet, princess tree, kudzu, and Chinese silver grass. An ongoing volunteer cooperative monitoring project with the Southern Research Station and SAMAB was conducted on a portion of the Appalachian Ranger District. The project is utilizing volunteers both to monitor and eradicate invasive outbreaks. The goal is to learn more about the spread of individual invasive species as well as educate interested members of the public.

Goal or Desired Condition: Attributes and resources of special interest areas including wilderness, research natural areas, and areas registered by the North Carolina Natural Heritage Program are maintained.

Monitoring Item	Results
Attributes and Resources of Wilderness	Trails and trail bridges were damaged in several Wildernesses and Wilderness Study Areas in four hurricanes of 2004 that caused major flooding in the NC mountains. A storm recovery team began efforts to repair trails and trail bridges in 2005. Cross-cut saw crews cleared debris from over a hundred miles of Wilderness trails. An Environmental Assessment for the Treatment of Hemlock Wolly Adelgid (HWA) was completed in 2005. The decision was made to treat HWA in several Wildernesses and Wilderness Study Areas to maintain their ecological integrity and provide a key link in an overall conservation strategy.
Attributes and Resources of Wild and Scenic Rivers	The Comprehensive River Management Plan for Wilson Creek National Wild and Scenic River was finalized in 2005. It provides standards and guidelines to maintain and enhance the outstandingly remarkable values of Wilson Creek.

SPECIES DIVERSITY

Goal or Desired Condition: Maintain viable populations of existing native wildlife, fish, and plants. Threatened and endangered plant and animal species are protected, managed or recovered consistent with the Endangered Species Act; and sensitive species are conserved.

Habitat and population status of Management Indicator Species (MIS)

In FY 2005 the list of MIS species for the Nantahala and Pisgah National Forests was changed to the following:

Species	Estimated Population Trend 2005
Black bear	Increasing
White tailed deer	Decreasing
Pileated woodpecker	Increasing
Ovenbird	Decreasing
Rufous-sided towhee	Decreasing
Pine warbler	Static
Acadian Flycatcher	Increasing
Ruffed grouse	Static
Brook, brown and rainbow trout,	Static
Largemouth bass,	Static
Blacknose dace	Static
Smallmouth bass,	Static
Fraser fir	Static
Carolina hemlock	Decreasing
Ginseng	Static
Ramps	Static

Croatan National Forest MIS

Species	Estimated Population Trend 2005
Red-cockaded woodpecker	Increasing
Longleaf pine	Increasing
Wiregrass	Increasing

Habitat and population status of Management Indicator Species (MIS) [cont.]

Uwharrie National Forest MIS

Species	Estimated Population Trend 2005
Black bear	Increasing
White tailed deer	Increasing
Gray Squirrel	Static in Cycles
Turkey	Increasing

The Following MIS Report Updates Were Produced in FY 2005:

Acadian Flycatcher http://www.cs.unca.edu/nfsnc/me2005/acadian_flycatcher.pdf
Ramps http://www.cs.unca.edu/nfsnc/me2005/wild_ramps.pdf
Carolina Hemlock http://www.cs.unca.edu/nfsnc/me2005/carolina_hemlock.pdf
Fraser Fir http://www.cs.unca.edu/nfsnc/me2005/fraser_fir2.pdf

Other Wildlife Monitoring

2005 Regional Landbird Strategy

Forest neotropical migratory bird surveys were accomplished through 10-minute point counts on 353 established plots across the National Forests in North Carolina (114 points on the Nantahala NF, 144 points on the Pisgah NF, 55 points on the Uwharrie NF, and 40 points on the Croatan NF) during the spring (May-June 15) of FY2005. A total of 3,940 birds were heard or seen, consisting of 86 species.

Results of 2003-5 spring bird monitoring are provided for comparison.

Species	# Individuals detected during point counts in 2003	# Individuals detected during point counts in 2004	# Individuals detected during point counts in 2005
Acadian Flycatcher	91	104	68
Alder Flycatcher	0	7	0
American Coot	1	0	0
American Crow	147	187	169
American Goldfinch	60	29	53
American Redstart	2	4	1

Other Wildlife Monitoring [cont.]

Species	# Individuals detected during point counts in 2003	# Individuals detected during point counts in 2004	# Individuals detected during point counts in 2005
American Robin	39	58	90
Bachman's Sparrow	5	9	2
Barred Owl	1	4	0
Barn Swallow	1	2	0
Black-and-white Warbler	41	67	2
Blackburnian Warbler	12	30	0
Black-billed Cuckoo	3	0	2
Black-capped Chickadee	6	8	67
Black-throated Blue Warbler	55	66	19
Black-throated Green Warbler	70	98	1
Blue Grosbeak	2	2	7
Blue Jay	50	64	61
Blue-gray Gnatcatcher	50	49	94
Blue-headed Vireo	35	65	0
Blue-winged Warbler	3	4	67
Broad-winged Hawk	1	2	37
Brown Creeper	2	8	74
Brown Thrasher	10	14	1
Brown-headed Cowbird	17	23	1
Brown-headed Nuthatch	25	10	8
Canada Goose	3	6	7
Canada Warbler	18	45	23
Carolina Chickadee	64	72	7
Carolina Wren	167	225	1
Cedar Waxwing	9	18	35
Chestnut-sided Warbler	141	123	60
Chimney Swift	9	17	108
Chipping Sparrow	5	7	16
Common Grackle	13	20	0
Common Nighthawk	2	5	145
Common Raven	1	8	20
Common Yellowthroat	182	212	1

	Species	# Individuals detected during point counts in 2003	# Individuals detected during point counts in 2004	# Individuals detected during point counts in 2005
Other Wildlife Monitoring [cont.]	Dark-eyed Junco	88	134	0
	Downy Woodpecker	18	18	5
	Eastern Bluebird	2	8	0
	Eastern Kingbird	3	3	6
	Eastern Phoebe	2	4	74
	Eastern Towhee	345	362	0
	Eastern Tufted Titmouse	121	157	158
	Eastern Wood-Pewee	37	35	0
	European Starling	2	0	16
	Field Sparrow	15	17	8
	Fish Crow	7	6	4
	Golden-crowned Kinglet	43	85	6
	Golden-winged Warbler	1	1	0
	Grasshopper Sparrow	0	1	240
	Gray Catbird	81	91	121
	Great Crested Flycatcher	80	76	29
	Great Horned Owl	0	1	0
	Green Heron	1	1	17
	Hairy Woodpecker	6	13	0
	Hermit Thrush	0	10	69
	Hooded Warbler	113	101	1
	House Wren	74	2	0
	Indigo Bunting	119	143	45
	Kentucky Warbler	6	4	0
	Least Flycatcher	3	4	45
	Louisiana Waterthrush	1	1	0
	Mourning Dove	58	70	0
	Northern Bobwhite	10	15	8
	Northern Cardinal	95	132	10
	Northern Flicker	30	26	117
	Northern Parula	72	82	0
	Northern Rough-winged Swallow	0	16	1

Other Wildlife Monitoring [cont.]

Species	# Individuals detected during point counts in 2003	# Individuals detected during point counts in 2004	# Individuals detected during point counts in 2005
Orchard Oriole	5	3	123
Ovenbird	202	200	5
Palm Warbler	0	2	7
Peregrine Falcon	1	0	1
Pileated Woodpecker	58	78	4
Pine Siskin	0	8	36
Pine Warbler	75	47	25
Prairie Warbler	163	161	13
Prothonotary Warbler	29	74	76
Purple Martin	5	9	0
Red Crossbill	0	16	51
Red-bellied Woodpecker	33	52	0
Red-breasted Nuthatch	7	19	0
Red-cockaded Woodpecker	10	10	206
Red-eyed Vireo	347	345	2
Red-headed Woodpecker	12	6	0
Red-shouldered Hawk	1	1	96
Red-tailed Hawk	0	1	9
Red-winged Blackbird	0	2	64
Rose-breasted Grosbeak	28	29	49
Ruby-throated Hummingbird	10	15	16
Ruffed Grouse	1	2	0
Scarlet Tanager	70	84	7
Song Sparrow	23	40	19
Summer Tanager	30	30	29
Swainson's Warbler	15	12	5
Tree Swallow	2	0	331
Turkey Vulture	5	0	6
Veery	56	110	1
Whip-poor-will	0	2	2
White-breasted Nuthatch	35	38	0
White-eyed Vireo	72	55	31

Other Wildlife Monitoring [cont.]

Species	# Individuals detected during point counts in 2003	# Individuals detected during point counts in 2004	# Individuals detected during point counts in 2005
Wild Turkey	3	3	0
Winter Wren	7	33	17
Wood Duck	1	1	3
Wood Thrush	41	82	63
Worm-eating Warbler	23	32	1
Yellow Warbler	5	4	50
Yellow-bellied Sapsucker	2	0	22
Yellow-billed Cuckoo	31	43	3
Yellow-breasted Chat	39	30	0
Yellow-throated Vireo	16	13	0
Yellow-throated Warbler	41	52	61
Total # Species=112	Total # Birds=4,280	Total # Birds=5,035	Total # Birds=3,940

Prothonotary Warbler

Other Wildlife Monitoring [cont.]

2005 Bat Surveys

Forest bat monitoring was accomplished through mist netting of likely travel corridors and foraging areas at eight areas on the Nantahala and Pisgah National Forests during the summer of FY2005. These included the Nantahala Dam, Lloyd Cove, Yellow Patch, and Alarka Laurel on the Nantahala National Forest; and Looking Glass Creek and Bent Creek on the Pisgah National Forest. A total of 89 bats were captured, consisting of 8 species. Several species of interest were captured on the Nantahala National Forest. They included *Myotis leibii* (eastern small-footed bat) at Nantahala Dam, Lloyd Cove, and Yellow Patch; and *Lasiurus cinereus* (hoary bat) and *Lasionycteris noctivagans* (silver-haired bat) at Alarka Laurel.

Result of summer bat monitoring, Nantahala and Pisgah National Forest.

Species	# Individuals captured 2003	# Individuals captured 2004	# Individuals captured 2005
Lasiurus borealis	14	24	11
Pipistrellus subflavus	45	2*	10
Eptesicus fuscus	17	7*	6
Myotis septentrionalis	63	17	33
Myotis lucifugus	30	11*	17
Myotis leibii		1	8
Lasionycteris noctivagans			1
Lasiurus cinereus	1		3
Total	170	65	89

*Additional bats of these species were detected on the Pisgah National Forest using Anabat.

Note: No additional *Myotis sodalis* (Indiana Bat) sightings occurred on NFsNC in 2000 – 2005.

Other Wildlife Monitoring [cont.]

Male ruffed grouse on a drumming log in spring..

Ruffed Grouse/Wild Turkey monitoring occurred on the Nantahala and Pisgah National Forests during the springs of 2005. The following table displays the results of the monitoring effort. Spring 2004 results are displayed in the second table for comparison purposes.

2005	#Grouse	#Turkey	#Stations	Grouse/station	Turkey/station
Total	107	35	694	0.154	0.050
Appalachian	18	4	225	0.080	0.018
Cheoah	1	0	24	0.042	0.000
Grandfather	0	2	70	0.000	0.029
Highlands	15	15	77	0.195	0.195
Pisgah	57	8	171	0.333	0.047
Tusquitee	0	0	26	0.000	0.000
Wayah	16	6	101	0.158	0.059

2004	#Grouse	#Turkey	#Stations	Grouse/station	Turkey/station
Total	189	71	1207	0.1566	0.0588
Appalachian	39	8	302	0.1291	0.0265
Cheoah	52	15	199	0.2613	0.0754
Grandfather	0	5	69	0.0000	0.0725
Highlands	36	20	206	0.1748	0.0971
Pisgah	19	9	159	0.1195	0.0566
Tusquitee	13	1	76	0.1711	0.0132
Wayah	30	13	196	0.1531	0.0663

Coldwater stream fish populations trends	**Long-term trout population monitoring continued in FY 2005.** Monitoring on approximately 12 miles of streams within Nantahala and Pisgah National Forests continues to support earlier findings that while individual populations exhibit high annual variability in age class structure and biomass, **overall trends in brook, brown, and rainbow trout, and associated nongame species populations across the Nantahala and Pisgah have remained stable during the last 10 years**. Storm recovery efforts documented older year class losses, but significant increases in reproduction that strengthened brook trout populations within watersheds affected by the severe flooding.
Small Impoundment Assessment	**During FY05, Mill Ridge and Moye Ponds were assessed to determine the recreational fishery restoration potential.** It was determined that Moye Pond is too ephemeral (it is located within the floodplain of the French Broad River) to support a highly-managed put-and-take fishery. However, **Moye Pond does provide outstanding seasonal fishing opportunities for bass, sunfish, and catfish**. It has been determined that the dam at Mill Ridge Pond needs structural improvement before a sustainable recreational fishery can return to the area. There are remnant populations of bass and other sunfish surviving in the pond, but **infrastructure needs are great to restore a safe, viable recreational fishery in Mill Ridge Pond**. Additionally, **two new ponds were identified for management on the Croatan National Forest.**
Reservoir Fish Communities	**Long-term monitoring of reservoir fish communities continued on approximately 200 acres of mountain reservoirs in FY 2005.** Reservoirs included in this monitoring are Hiwassee Lake, Fontana Lake, Santeetlah Lake, and Chatuge Lake on the Nantahala National Forest and Badin Lake on the Uwharrie National Forest. Based on the age of the reservoirs and results of long-term population monitoring efforts, it is thought that habitat enhancement is one key to maintaining reservoir fish population stability on both the Nantahala and Uwharrie National Forests. To this effect, approximately 150 acres of reservoir shoreline habitat were improved on the Nantahala National Forest during FY05. Additionally, approximately 375 acres of mid-depth and deepwater habitats were enhanced across the Nantahala and Uwharrie National Forests. As with coldwater stream fish populations, reservoir fish communities exhibit high annual variability in age class structure and biomass, although **overall trends in reservoir fish species populations have remained stable during the last 10 years.**

Aquatic rare species and habitat	**Approximately 130 miles of stream across the National Forests in North Carolina were evaluated for rare aquatic species presence and suitable habitat during FY 2005.** Approximately 100 miles of these inventories were done to maintain compliance with environmental laws and regulations during the NEPA process for forest management activities, as well as to further the science of individual species. Additionally, approximately 30 miles of stream and river were assessed to determine the effects of severe flooding on hellbender and freshwater mussel populations. In both cases, **animal density was reduced, but multiple age classes remained**. Hellbender and mussel viability across the Forests was not affected by severe flooding.
Aquatic invertebrate populations	**Aquatic invertebrate populations were monitored in 9 streams across the Nantahala and Pisgah National Forests.** As with fish populations, aquatic invertebrate populations tend to exhibit high annual variability in community structure and biomass; however, **overall trends in aquatic invertebrate populations across the Nantahala and Pisgah National Forests have remained stable.**
Freshwater mussel populations	**Freshwater mussel populations continue to be monitored in the Little Tennessee and Nolichucky Rivers** through cooperative efforts with the U.S. Fish and Wildlife Service and North Carolina Wildlife Resources Commission to implement the recovery plan for the endangered Appalachian Elktoe (*Alasmidonta raveneliana*). In addition, aquatic habitats suitable for all freshwater mussels continue to be inventoried to improve the reliability of mapped species' ranges and distributions across the National Forests in North Carolina. Despite regional declines in some species' populations, no declines have been documented on the Forests. In fact, **the known range and distribution of freshwater mussels on the Forests continues to expand** as inventories of suitable habitat are completed. In FY05, the range of several rare mussels was documented within Barnes Creek and Poison Fork on the Uwharrie National Forest to prepare for future native species restoration efforts.
Channel habitat conditions	**Aquatic habitat conditions were mapped at the channel unit scale long approximately 200 miles of mountain streams.** This large-scale effort was to assess the effects of severe flooding on mountain stream habitat following the hurricanes of fall 2004. In summary, mean substrate particle size was increased (sediments were flushed out) and habitat units (types) were "rearranged", but not lost.

Native Species Restoration (brook trout)	**In FY05, the cumulative total of brook trout populations analyzed for strain origin topped 300**. Most of these populations occur on the Nantahala and Pisgah National Forests. To date, it has been determined that approximately 36% of these populations are the strain native to the Southern Appalachian Mountains (often referred to as "speckled trout"), while 10% show evidence of northern strain genetics, and 54 % show evidence of both northern and southern strain genes. These efforts continue as the first steps towards the restoration of native brook trout in North Carolina.
Progress being made toward recovery of T&E Species	There were 32 Threatened or Endangered species that occur or may occur on the National Forests in North Carolina at the end of FY 2005. <u>Activities in FY 2005:</u> Red-cockaded Woodpecker. Nest checks, banding young, fledge checks, population census: 61 nestlings banded, 50 fledglings, 150 adults observed. Spreading Avens. Environmental baseline established at Roan High Bluff with 100% sampling and assessment. Bald Eagle. One new nest discovered on the Croatan. Assessed nesting success and adult census at all three sites. Virginia Spirea. Monitoring & inventory was initiated across three populations of Virginia Spirea in the Cheoah River, Tuckasegee River, and Whiteoak Creek. Monitoring consisted of documentation of the physical extent of subpopulations. Three new subpopulations were located in the Cheoah River. The population along Whiteoak Creek was partially impacted by recent bridge repair. Swamp Pink. An inventory was completed across all the subpopulations of swamp pink within the Pink Beds. This population is the largest one known across its range. The assessment clearly delineated ten subpopulations; four were newly located.

Small Whorled Pogonia. The annual census of small whorled pogonia continues to document a precipitous decline in this species across the Nantahala and Pisgah National Forests. Only 1 individual was located in 2005 within a single site on the Pisgah NF.

Rock Gnome Lichen. An inventory of two drainages with historical documentation of rock gnome lichen located one small extant population. However, two new populations of rock gnome lichen were located in 2005.

Heller's Blazing Star. One new population was discovered in 2005.

Status of Threatened and Endangered Animals

ANIMALS	YEAR LISTED	STATUS	ON FORESTS?
Appalachian Elktoe Mussel	1994	E	Occurs
Red Wolf	1967	E	Extirpated
Spotfin Chub	1977	T	Occurs
Peregrine Falcon	1970	T	Occurs
Eastern Cougar	1973	E	May occur
Carolina Northern Flying Squirrel	1985	E	Occurs
Spruce-fir Moss Spider	1995	E	Occurs
Noonday Snail	1978	T	Occurs
Indiana Bat	1967	E	Occurs
Little-Wing Pearly Mussel	1988	E	Occurs
Virginia Big-eared Bat	1979	E	May occur
Red cockaded Woodpecker	1970	E	Occurs
Bald Eagle	1967	T	Occurs
American Alligator	1967	TSA*	Occurs
Bog turtle	1997	TSA*	Occurs

*Threatened due to similarity in appearance to another species.

Status of Threatened and Endangered Plants

PLANTS	YEAR LISTED	STATUS	ON FORESTS?
Sensitive Jointvetch	1992	T	May occur
Spreading Avens	1990	E	Occurs
Swamp Pink	1988	T	Occurs
Dwarf-flowered Heartleaf	1989	T	May occur
Mountain Bluet	1990	E	Occurs
Mountain Golden Heather	1980	T	Occurs
Small Whorled Pogonia	1982	E	Occurs
Heller's Blazingstar	1987	T	Occurs
Bunched Arrowhead	1979	E	May occur
Mountain Sweet Pitcher Plant	1988	E	May occur
Green Pitcher Plant	1979	E	May occur
White Irisette	1991	E	May occur
Blueridge Goldenrod	1985	T	Occurs
Rough-leaved Loosestrife	1987	E	Occurs
Schweinitz's Sunflower	1991	E	Occurs
Virginia Spirea	1990	T	Occurs
Rock Gnome Lichen	1995	E	Occurs

Sensitive Species Monitorining

New populations of the following sensitive plant species were located in 2005: Piedmont indigo bush, ravine sedge, Fraser's loosestrife, broadleaf Coreopsis, Smoky Mountain mannagrass, whiteleaf sunflower, butternut, divided-leaf ragwort, Carolina saxifrage, southern nodding Trillium, Appalachian violet, *Drepanolejeunea appalachiana*, waterfan, *Megaceros aenigmaticus*, and Highlands moss. Monitoring of previously documented populations was conducted within 26 populations for the following species: ravine sedge, Fraser's loosestrife, broadleaf Coreopsis, Piedmont aster, Georgia's aster, Biltmore sedge, Appalachian violet, whiteleaf sunflower, butternut, divided-leaf ragwort, miserable sedge, cuthbert's turtlehead, Appalachian gentian, waterfan, mountain saint john's- wort, mitchell saint john's- wort, sweet pinesap, Roan rattlesnake-root, ash-leaved golden banner, southern Oconee bells, and mountain catchfly. All the populations were extant, stable or had more individuals than previously counted or estimated except for two species, Fraser's loosestrife and Appalachian violet. The population of the former species was impacted by a recent road project, the latter by a recreation project.

Forest Concern Species Monitoring	New populations were located for the following forest-concern species: smooth sunflower, thin-pod white wild indigo, northern shorthusk grass, Wood's sedge, granite-dome bluet, Cumberland azalea, Huger's carrion-flower, orange peatmoss, and bog clubmoss. The clubmoss is the first documentation of the species on the NFsNC and represents a southern range extension of 75 aerial miles. Monitoring of previously documented populations was conducted within 26 populations for the following species: smooth sunflower, thin-pod white wild indigo, glade wild quinine, Carolina thistle, northern shorthusk grass, Canada reedgrass, Blue Ridge bindweed, purple sedge, bleeding heart, slender wheatgrass, granite dome bluet, largeleaf waterleaf, Earle's blazing star, bristly muhly, prairie ragwort, large-leaved grass-of-parnassus, northern beech fern, Huger's carrion-flower, and prairie dropseed. All the populations were extant with what were estimated to be stable populations trends based on previous counts or estimates.

Monitoring Results Related to Multiple Benefits to People

OUTDOOR RECREATION

Desired Condition: Protect the beauty of the Forests through special attention to visually sensitive areas and careful application of resource management activities.

Desired Condition: Provide different environmental and social settings for outdoor recreation opportunities that range from primitive to developed. Provide for a variety of recreational activities appropriate to these settings and the forest environment. Provide all recreation visitors to the National Forests the opportunity to participate in activities and programs and use facilities to the highest level of access practicable.

Monitoring Item	Results
Amount and Types of Recreation Use	Storm Recovery work began on the list of over 600 miles of trail and more than 50 major trail bridges damaged in the three hurricanes that caused extensive flooding in the NC mountains in 2004. This work continued into 2006. The newly enacted Recreation Enhancement Act made changes to and extended recreation fee authority for the Forest Service for ten years. The fees generated by users significantly supported forest recreation in 2005. As appropriated funding has dropped over the last decade, the retention of user fees has become increasingly important in allowing the forest to maintain existing services and fund site improvements. In FY 2005, the $1,031,536.40 collected helped to fund the following projects: -Reconstructed Nantahala River takeout site - Repaired water systems at six sites - Repaired buildings at seven sites. - Removed hazard trees at five sites - Repaired wastewater treatment plants at two sites - Repaired target stands at one shooting range - Replaced fire rings at four campsites

Monitoring Item	Results
	- Repaired roads/parking areas at five sites - Kept two campgrounds open a total of 330 days longer than normal to provide requested public service - Constructed one accessible campsite - Constructed one bathhouse - Maintained 114 miles of trails (OHV and mountain bike). - Improved interpretive services at eight sites. Provided 12 additional educational workshops, 39 additional days of interpretive programs, and additional brochures and improved information boards. • Some funds were kept in reserve to complete construction projects in FY06. Although official use counts are not scheduled to occur until FY 2008, revenue figures seem to indicate that use was slightly down from 2004 due to a wet summer recreation season and closure of numerous recreation site and trails due to a severe storm event in the fall. Congressional funding was received to repair recreational facilities and trails damaged by the fall storm. Much safety mitigation work was completed in the months immediately following the storm, such as hazard tree removal from dozens of recreation sites and hazard tree removal from hundreds of miles of trails. Contracts were initiated for several large recreation site projects, many of which are nearing completion. Examples of these projects include reconstruction/repair of Black Mountain Campground, Sycamore Flats Picnic Area, Coontree Picnic Area, Murray Branch Picnic Area, Lake Powhatan Recreation Area, Sliding Rock, Whitewater Falls Scenic Area, Standing Indian Campground, Kimsey Creek Group Camp, Neuse River Recreation Area, Fishers Landing, and Pinecliff Picnic Area. Numerous trail bridges were washed out or severely damaged and repaired or replaced and miles of trails were relocated or reconstructed. In addition, Congressional appropriations provided for several projects in FY 05. Contracts were awarded to replace toilet facilities at Jackrabbit Campground and Van

Monitoring Item	Results
	Hook Glade Campground, replace the water system at Cliffside Lake Recreation Area, improve two mountain bike trailheads at Bent Creek and construct one new trailhead, replace the toilet and visitor station at Roan Mountain Scenic Area, construct a picnic area at Kings Mountain Point, reconstruct campsites at Cheoah Point Campground, reconstruct the toilet at Joyce Kilmer Day Use Area, construct a campground at Curtis Creek and improve access to dispersed recreation sites on Wilson Creek.
Are VQO's being met? Is the scenery being maintained or enhanced?	All projects must be evaluated for compliance with assigned Visual Quality Objectives (VQO's). In 2005, two highway, four special use, two land exchange, and seven timber projects received detailed design attention with 3-B modeling to assure compliance with assigned VQO's.

FORESTRY/SILVICULTURE

Goal or Desired Condition: A variety of silvicultural treatments are used to provide a continuous supply of wood products with emphasis on high quality hardwoods.

Monitoring Item	Results
Southern Pine Beetle Restoration & Prevention FY 2005	**Reforestation: Site Prep. for Planting = 507 acres** **Planting & Nat. Regen. = 799 acres** **TSI: Release of Planted Seedlings = 8 acres** **SPB Prevention: Precom. Thinning = 171 acres**
Timber Stand Improvements (TSI), FY 2005	**TOTAL for FY 2005 = 1,719 acres** **PLANS PROJECTED = 2,487 acres**

<table>
<tr><th>Monitoring Item</th><th>Results</th></tr>
<tr><td>Acres Harvested in FY 2005 by Method, and Plan Projected Harvest</td><td>
<table>
<tr><th colspan="3">ALL NFsNC FORESTS</th></tr>
<tr><th>Method</th><th>FY 2005 Harvested Acres</th><th>Plan Projections</th></tr>
<tr><td>Even-Aged/ Two-Aged</td><td>389</td><td>2,767</td></tr>
<tr><td>Uneven-Aged</td><td>13</td><td>500</td></tr>
<tr><td>Thinning</td><td>600</td><td>-</td></tr>
<tr><td>Salvage</td><td>81</td><td>-</td></tr>
<tr><td>Shelterwood Removal</td><td>5</td><td>-</td></tr>
<tr><td>TOTAL</td><td>1,088</td><td>3,267</td></tr>
</table>
</td></tr>
<tr><td>Timber Sale Volume</td><td>
<table>
<tr><th>Allowable Sale Quantity (ASQ)</th><th>Volume Harvested 2005</th><th>Volume Offered 2005</th><th>Volume Sold 2005</th></tr>
<tr><td>TOTAL = 43 MMBF/Year</td><td>17,221 ccf or 8.61 mmbf</td><td>33,881 ccf or 16.9 mmbf</td><td>33,881 ccf or 16.9 mmbf</td></tr>
</table>
CCF = hundred cubic feet MMBF = million board feet
</td></tr>
</table>

FOREST	VOLUME OFFERED 2005 (CCF)	VOLUME SOLD 2005 (CCF)	VOLUME HARVESTED 2005 (CCF)
CROATAN	8,152	8,152	1,132
UWHARRIE	2,391	2,391	3,937
NANTAHALA/PISGAH	23,338	23,338	12,152
TOTAL	33,881	33,881	17,221

Botanical Products	A variety of non-timber forest products are being collected on the Forest. Those species with the greatest number of issued permits and the greatest sustainability concerns were monitored in 2005. The 18 sites with permanent ramp plots were monitored for the fifth consecutive year. These sites vary in the level of harvest pressure. Most of the populations have remained stable although the most accessible sites have the lowest population densities. Remonitoring was conducted within permanent plots across 3 sites with Galax and 5 additional sites had new monitoring plots established. Initial assessments indicate a stable trend for Galax across the monitored collecting areas. Harvest plots were remonitored for ginseng and black cohosh in 2005. These populations indicate variable declines based on the frequency of harvest. Log Moss monitored plots continue to indicate a very slow rate of recovery, from 15 to 25 years following the initial harvest. Based on these and other monitored data, an assessment was made on the need to change current permit guidelines for NTFPs on the National Forests in NC. Major changes included discontinuing the sale of log moss, rotating ramp collection areas, increasing the size of ginseng protection areas, and increasing the seasonal restriction on Galax in the spring when new leaves are emerging.

Galax

HERITAGE RESOURCES

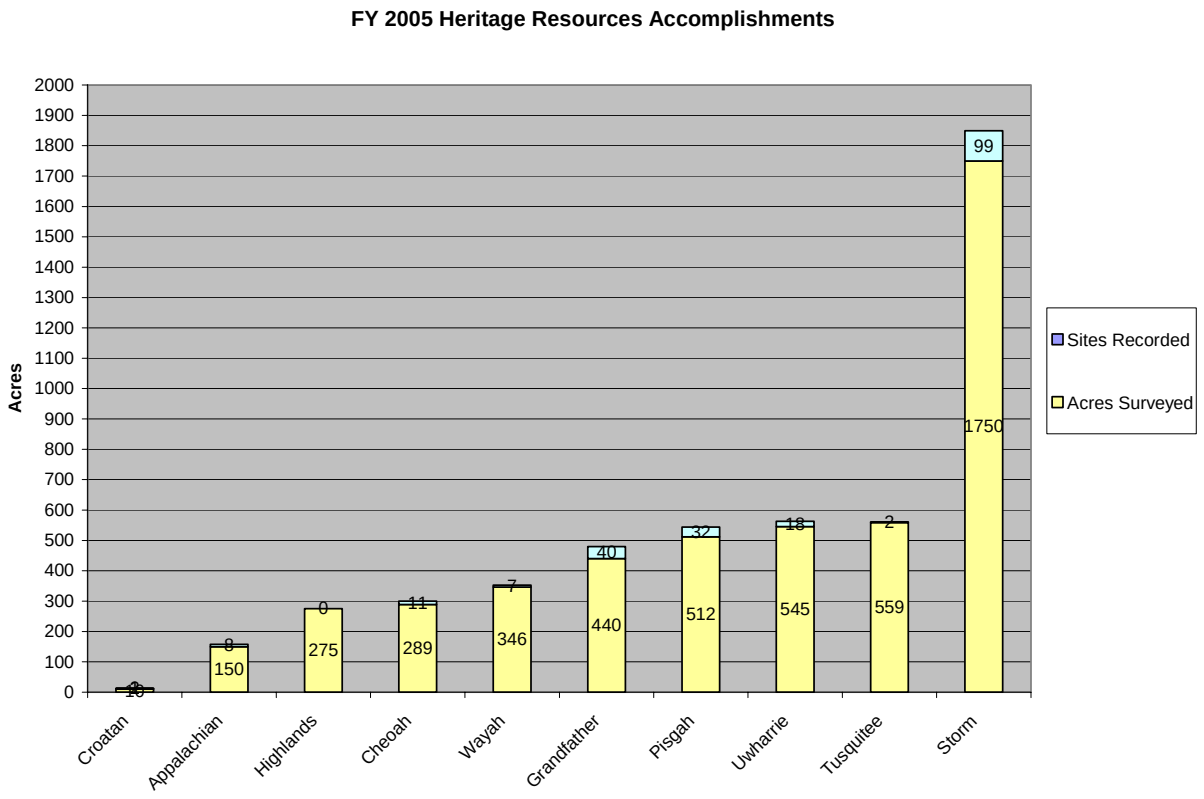
General Direction: Heritage Resources, which are listed on or eligible for the National Register of Historic Places or the National Register of Historic Landmarks, are protected. Suitable sites are developed and/or interpreted for public use and enjoyment.

14,000 year old Clovis spear point made of Uwharrie vitric tuff

Uwharrie NF Artifacts

Stamp Mill Foundation

Monitoring Item	Results		
		Sites & Properties Identified	Acres Surveyed
Heritage Resource Sites Identified in Relation to Acres Surveyed	FY 2005	254	5,155
	ALL-TIME TOTAL	5,382	179,357

Monitoring Item	Results
	
Tribal Relations Activities	The Forest continued to work in partnership with other agencies, American Indian Tribes, local communities and universities on the National Historic Trail of Tears.
Site Protection	Storm recovery efforts required monitoring 110 known significant sites in affected areas. Thirty-eight (38) of these sites were found to have been damaged and required salvage excavations and stabilization. Ninety-nine (99) new sites were recorded during compliance surveys of 1750 acres in support of storm recovery projects.

Monitoring Item	Results
Site Protection [cont.]	 Hurricane Flooding Impacts at the Bent Creek Site In addition to storm related sites, sixty-eight (68) heritage resources, 45 prehistoric and 23 historic, regarded as susceptible to vandalism or looting, potential impact from project implementation, visitor use and/or natural deterioration were visited and formally assessed and documented. Overall, implementation of Forest management projects such as recreation developments, timber harvest, road construction, etc., has not resulted in adverse impacts to heritage resources. However, monitoring has shown that better coordination with archeologists and more oversight is needed for trail construction / reconstruction and some timber harvest activities when allowed in proximity to archeological sites. Several sites have been determined to be larger and more significant than when

Monitoring Item	Results
	originally reported and recorded. Archeologists need to conduct more intensive site surveys, complete more thorough documentation and fully evaluate sites for NRHP eligibility before project implementation. Increasing numbers of Forest users have had impact on sites. Dispersed recreation activities, off-highway vehicles, horse trail use, mountain bike trail use, and dispersed camping are impacting significant archeological resources. Impacts were observed at many sites, ranging from minor to severe erosion and exposure of artifacts. OHV and horse use on the Uwharrie and Grandfather Ranger Districts continue to impact heritage resources. There has also been recent vandalism at historic cemeteries. The Forest has seen an increase in illegal metal detector use as well as requests for the activity. There needs to be a consistent Forest-wide policy instituted. Historic structures, fire lookouts and cabins, continue to deteriorate at an increasing rate, accelerated by the recent storms. Twelve lookouts were documented and evaluated, 10 were found eligible to the NRHP. The evaluation of three historic work centers was contracted for completion in 2006. The historic structures are identified in the Forest's Facilities Master Plan. Eight segments of trail and associated sites along the Trail of Tears on the Wayah, Tusquitee and Cheoah Ranger Districts are being nominated to the NRHP.

Monitoring Results Related to Effective Public Service

<table>
<tr><th>Monitoring Item</th><th>Results</th></tr>
<tr><td>Land Adjustment in Support of LRMP Goals</td><td>Acres Acquired by Exchange/Nantahala NF = 12
Acres Conveyed by Exchange/Nantahala NF =8
Acres Purchased/Donated = Uwharrie NF = 190
Pisgah NF = 10
Nantahala NF = 100</td></tr>
<tr><td>Special Uses Compatible With LRMP Goals</td><td>Special use authorizations allow for the use of National Forest System lands for a wide variety of purposes. Some authorize facilities and services necessary for public health, welfare, and safety while others authorize uses of a private nature.

Special Use Permits by Forest

<table>
<tr><th>Forest</th><th>Recreation</th><th>Lands</th><th>Total</th></tr>
<tr><td>Nantahala</td><td>110</td><td>544</td><td>654</td></tr>
<tr><td>Pisgah</td><td>168</td><td>309</td><td>477</td></tr>
<tr><td>Croatan</td><td>7</td><td>86</td><td>93</td></tr>
<tr><td>Uwharrie</td><td>6</td><td>90</td><td>96</td></tr>
</table>

Of these permits state-wide, 1,029 are for land-based uses such as road easements and water systems, and 291 permits are for recreation activities such as outfitting, guiding, and whitewater rafting.

Key projects included:
- 35 NC Department of Transportation Projects for the improvement of existing public roads.

  </td></tr>
</table>

Monitoring Item	Results
Special Uses Compatible With LRMP Goals [cont.]	- Three Federal Highway projects for major multi-lane highways- Havelock Bypass (Croatan), Corridor K (Cheoah), and NC 215 (Pisgah). - Relicensing of three hydroelectric projects involving 10 impoundments. Program emphasis will continue to be the monitoring of existing uses to ensure they are operated and maintained with minimal impact on the land. New applications are managed to ensure they are consistent with the Forest Land and Resource Management Plans and Forest Service Regulations.

Fire Management

Monitoring Item	Results
National Fire Plan Accomplishments for FY 2004	

Prescribed Fires Accomplishments - National Forests in North Carolina						
Year	Total Acres	Fuels	Wildlife	Site Prep	Other (T&E)	
2005						
Croatan		18,885	4,654	965		
Uwharrie		1,696		223		
N/P		4,949		442		
TOTAL		25,530	4,654	1,630		31,814
2004						
Croatan		18,506		500		
Uwharrie		1,808				
N/P		5,573		259		
TOTAL		25,887		759		26,646
2003						
Croatan		15,810				
Uwharrie		1,666				
N/P		4,859				
TOTAL		22,335	0	0		22,335
2002	21,854	22,180				
2001	20,000	20,000				
2000	26,000	26,000				
1999	No information available					
1998	26,352	22,734	3,618			
1997	26,092	22,190	2,183	1,154		
1996	15,964	13,900	1,231	401		
1995	12,881	9,279	586	879		
1994	13,027	7,940	2,931	648		
1993	11,399.50	7,057	2,986.50	1,356		
1992	7,944	4,862	2,202	725	155	

FY 2006 Action Plan

1) **Begin revision of the Uwharrie Land Management Plan.**

2) **Institute a method of tracking activities such as treatments to suppress non-native invasive species to facilitate easier monitoring (carried over from FY 2005).**

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