



# MONITORING AND EVALUATION REPORT

UNITED STATES  
DEPARTMENT OF  
AGRICULTURE

FOREST SERVICE  
SOUTHERN REGION

DANIEL BOONE  
NATIONAL FOREST  
KENTUCKY

## FISCAL YEARS 2005 and 2006

(October 1, 2004 through September 30, 2006)

### DANIEL BOONE NATIONAL FOREST

September 2007



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## **FOREST SUPERVISOR'S CERTIFICATION**

This is the first monitoring and evaluation report for the Forest Plan since it's approved on April 16, 2004. Implementation of the Forest Plan began on May 24, 2004, thirty days following publication of a Notice of Availability in the Federal Register announcing the Final Environmental Impact Statement for the Land and Resource Management Plan for the Daniel Boone National Forest.

This report covers a two-year period, fiscal years 2005 and 2006. Due to the newness of the Forest Plan there are limited opportunities to evaluate monitoring of activities that have been approved under the newly revised Forest Plan. Monitoring in some areas is long-term and evaluation of that data will occur later in time.

I have evaluated and endorse the monitoring and evaluation results presented in this report. I find that there are no recommended changes to the Land and Resource Management Plan at this time, and therefore consider it sufficient to continue to guide land and resource management of the Daniel Boone National Forest for the foreseeable future.

/s/ Jerome E. Perez

December 3, 2007

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JEROME E. PEREZ  
Forest Supervisor

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Date

## I. INTRODUCTION

This report covers a two-year period from October 1, 2004 through September 30, 2006 (Fiscal Years 2005 and 2006). Fiscal year 2005 was the first full year of implementing the Land and Resource Management Plan for the Daniel Boone National Forest (Forest Plan) that was revised in April 2004. This report is structured to address nineteen (19) monitoring questions that are described in Appendix D of the Forest Plan.

### Forest Plan

The Forest and Rangeland Renewable Resources Planning Act (RPA), as amended by the National Forest Management Act (NFMA), directs that each national forest develop a comprehensive forest management plan, and that these plans be reviewed and updated every 10 to 15 years, or earlier if conditions change significantly. In addition to the RPA and the NFMA, the National Environmental Policy Act (NEPA), Government Performance and Results Act of 1993 and the 2000 Revision of the USDA Forest Service Strategic Plan guided the revision process.

The first Forest Plan for the Daniel Boone National Forest was approved in September 1985. That plan was amended fourteen (14) times over the years as new information became available, and issues and conditions changed. Even so, an analysis of the current management situation identified a need to revise the Forest Plan to better reflect changing conditions, evolving public values, new scientific findings, new laws and regulations, and current agency policy. The following is a summary of the milestones and dates that occurred in revising the Forest Plan:

June 21, 1996	Notice of intent (NOI) to prepare an environmental impact statement was published in the Federal Register.
April 2003	The Draft Environmental Impact Statement (DEIS) was released.
November 6, 2003	A Biological Assessment was prepared and formal consultation occurred between the Forest Service and the USDI Fish and Wildlife Service as required by the Endangered Species Act.
March 20, 2004	A Biological Opinion was released by the USDI Fish and Wildlife Service.
April 16, 2004	A Record of Decision (ROD) and accompanying Final Environmental Impact Statement (FEIS) and Forest Land and Resource Management Plan (Forest Plan) were released.
May 24, 2004	Implementation of the Forest Plan begins.
July 2004	Two appeals were filed; one appeal was filed on behalf of Kentucky Forest Industries Association, East Kentucky Chapter of the Society of American Foresters, Daniel Boone Forest Alliance, and the Southern Appalachian Multiple Use Council; and a second appeal was filed on behalf of Heartwood, Kentucky Heartwood, Cumberland Chapter of the Sierra Club, Wild South, and Wildlaw.
July 25, 2006	An Appeal Decision from the Washington Office was rendered affirming the Regional Forester's April 16, 2004 decision.

## Monitoring and Evaluation

Nineteen (19) monitoring questions were identified in Appendix D of the Forest Plan. Addressing these questions is accomplished by evaluating the results of annual monitoring. The Leadership Team for the Daniel Boone National Forest prioritizes monitoring activities based on recommendations from forest resource specialists, and after consideration of available funding and personnel. There are 87 monitoring tasks (Forest Plan, Appendix D), but not all are monitored each year. Monitoring and evaluation is documented on task sheets and are used to address the nineteen monitoring questions.

Monitoring is used to validate assumptions and effectiveness of Forest Plan Standards, and help in determining whether a change to the Forest Plan is needed.

## II. FOREST PLAN MONITORING QUESTIONS

### 1. Are rare communities being protected, maintained, and restored?

No new occurrences of rare communities were reported. There is insufficient data to determine trends at this point in time.

**London and Stearns Ranger Districts** - Deterioration in the form of changed hydrology appears to be the result of changes in weather patterns interacting with watershed changes occurring 15 to 25, or more, years ago. Current management actions do not appear to account for hydrologic changes. Increased invasion by *Microstegium vimineum* ( ) appears to be related to illegal off-highway vehicle use on a fireline. It appears that the weed was carried from private land by off-highway vehicle use. Another observation indicates that *Lygodium palmatum*, a native, but sometime invasive fern is encroaching on wetlands and rare plants growing there.

**London Ranger District** - Three areas along Horse Lick Creek were planted with clumps of cane. Preliminary checks indicate that some plants died, but most have survived through July 2006. It will take 3 to 4 years to determine if cane is established in these areas.

**Stearns Ranger District** – Started a project designed to trap sediment reverse changes in hydrology of a streamhead wetland. One year following implementation, sediment was being trapped as planned and slowly filling in stream channels. The surrounding floodplain was moister indicating a raised water table. This same project also removed *Microstegium* in two watersheds.

**London Ranger District** - Prescribed burns were conducted to help control *Lygodium palmatum*. The burns covered the area around the wetland and fire crept into the wetland in a few places, killing the tops of some fern clumps,

effectively removing some of the *Lygodium* stems. Rare plants in the wetland showed indication that some would flower. A verbal report from a member of the public stated that over 100 stems were flowering at the burned site—the best seen in several years.

**2. Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges?**

No significant events occurred that resulted in a change to the age-class distribution by forest type. The estimate presented in the FEIS for the Forest Plan is still the best available.

**Silviculture Treatments** - A record of silvicultural treatments is now kept in the FACTS database. Data concerning forest community type is contained in the FSveg database, which links to the GIS stand layer. However, the data in FACTS does not yet have a link to any of the three FACTS-GIS layers. Therefore, there is no technical way to relate treatments to community type (groups of forest types).

However, from field observation, most if not all of the following treatments occurred either in the Mesic or Xeric Oak community types. Planting of shortleaf pine occurred in stands that were previously occupied by various mixtures of yellow pine and hardwood.

A list of silvicultural treatments that occurred in FY05 is shown in Table 2-1.

*Table 2-1 – Silviculture Accomplishments, FY2005, DBNF*

<b>Activity Description</b>	<b>Acres</b>
Full Planting Concurrent with Site Preparation	623
Site Prep Burn for Planting	343
Release of planted seedlings - Herbicide	322
Pre-commercial Thinning - Selected Trees	785
Other Stand Tending [improvement cutting]	80
Seed Production Area Maintained	30
Genetic Evaluation Plantation Maintained	3
<b>TOTAL AREA TREATED</b>	<b>2,186</b>

Silvicultural treatments in the Cumberland and Middle Kentucky River Management Areas focused on the re-establishment of shortleaf pine in stands damaged by the southern pine beetle in 2000. Acreage of yellow pine is still significantly below LRMP objectives (objective 1.1.F. & 1K-goal-2).

Silvicultural treatments in the Licking River Management Area concentrated on thinning of overstocked hardwood stands (Forest Plan Goal 2.1), and maintenance of seed production genetic improvement test areas (Forest Plan Goal 2.2).

The “Other Stand Tending”, treatment that occurred in the Upper Kentucky River Management Area was a chemical injection of cull trees competing with smaller oaks and other growing stock trees (Forest Plan Goals 2.1 & 8.3).

**Prescribed Burning** occurred on approximately 27,763 acres over a two-year period. These burns do not normally result in major forest type changes.

**Management Indicator Species (MIS)** – Survey data was collected and the data is being entered into corporate databases. Trend data analysis requires multiple years of data. Consequently, interpretation and evaluation has not begun. Vegetation data was collected at all breeding bird survey points.

**3a. Are high-elevation habitats being provided?**

No activities occurred that would result in a change to high-elevation habitat.

**3b. Are permanent grassy openings being maintained?**

*Table 3b-1 – Grassy opening summary*

Activity Description	FY2005	FY2006
Native grassy openings restored/renovated (acres)	90	99
Permanent grassy openings maintained (acres)	1,689	1,579

Field observations indicate that restorations to native grasses are occurring successfully.

**4. How well are key terrestrial habitat attributes being provided?**

**Mast Production** – More than 170,000 acres of upland oak stands are available for mast-production. Additionally, other forest types, such as mixed mesophytic hardwood or pine types, often have a significant component of oak, hickory, beech, and other nut producers. Historical data is not available for comparison or estimate of trends. However, even with increased oak mortality, many pine stands have converted to hardwood, and the forest is becoming older, on average, resulting in increased mast production.

**Snags** – Approximately 104,000 acres of forest is greater than 100 years old (15%) and contain a component of dead trees. Approximately 5,000 acres of older oaks have been affected by the two-lined chestnut borer leaving snags scattered across the landscape.

**5. What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?**

Methods for sampling fish and macro-invertebrates were established in cooperation with US EPA, Forest Service research, and the Southern Regional Office. During a several week period in June, aquatic biota was collected at 20 random sites in the Upper Cumberland basin at the same time that information

was collected for *Monitoring Question 5 – Task 18 and Monitoring Question 15 – Task 50*. The random sites were located on wadeable streams that drained more than five square miles. The data was collected, and compiled by crews from the Center for Aquatic Technology Transfer (CATT), a Forest Service research project that is based in Blacksburg, VA. Trend data analysis require multiple years of data. Consequently, interpretation and evaluation has not begun. An analyses of this data will be conducted that the results reported in future reports.

## **6. What are status and trends of forest health threats on the forest?**

***Fine Particulate Concentrations*** at monitors near the Forest continued to register values below the annual and 24-hour thresholds for the National Ambient Air Quality Standards (NAAQS). Ozone concentrations near the Forest were also below the 1-hour and 8-hour NAAQS.

Atmospheric deposition, or acid rain, is monitored by EPA and the KY Division of Air Quality at four sites in eastern Kentucky. None of the sites are on the National Forest, but the data collected represents a range of sites from north to south and is probably representative of conditions occurring on the National Forest. The data shows that sulfate and nitrate deposition continues to decrease, and the pH of wet deposition (rain and snow) continues to increase. The pH of rainwater 20 years ago was about 4.3 in eastern KY; it is now about 4.6. These changes are directly related to emission reductions that have taken place as a result of air pollution control regulations including the 1990 Clean Air Act Amendments. Emissions are projected to decrease further with implementation of the Clean Air Interstate Rule (CAIR).

Air quality, as indicated by state-operated monitors near the Forest, continues to meet the NAAQS. None of the Forest lies within or adjacent to an air quality non-attainment area.

***Fine Particulate Emissions*** from all prescribed fires conducted on the Daniel Boone National Forest in FY 2005 equaled approximately 521 tons, which is below levels predicted in the Final Environmental Impact Statement for the Forest Plan (1,459 to 2,458 tons). Data from state-operated fine particulate monitors (within 50 kilometers of the Forest) show that the 24-hour or annual fine particulate standards were not exceeded.

Air quality monitoring results from state-operated monitors around the Forest indicate that prescribed burning on the Forest was in compliance with the NAAQS. It would still be beneficial to monitor smoke dispersion from a few burn units, to validate modeling results and assess the effectiveness of smoke management practices.

*Insect and disease* - See attached *2005 Report of Insect and Disease Condition Report in Kentucky*, Prepared by Tim McClure, Kentucky Forest Health Specialist.

## **2005 Report of Insect and Disease Condition Report in Kentucky**

**Prepared by Tim McClure, Kentucky Forest Health Specialist**

### **Insects: Native**

#### **Locust leafminer**

This perpetual pest was only of concern in urban plantings where it posed an aesthetic problem but was not of any long term significance.

#### **Pine sawfly**

The population levels of the introduced pine sawfly were much lower than the previous year and were not significant except in a few urban settings.

#### **Southern Pine Beetle**

No significant outbreaks of southern pine beetle were reported in 2005.

#### **Forest Tent Caterpillar**

Several counties along the Ohio River in northern Kentucky experienced large populations of Forest Tent Caterpillar for the third year on a row. Feeding damage coupled with drought caused the death of many hardwood species in the area. Preliminary surveys indicate high populations again in 2006.

### **Insects: Non-Native**

#### **Gypsy Moth**

Trapping in 2005 netted a total of forty (40) gypsy moth males captured. Campbell County Kentucky alone accounted for twenty-nine (29) of these captures. This county is just south of Cincinnati, Ohio. KDOF set up gypsy moth traps in eighteen (18) counties covering over 3.6 million acres.

The Kentucky Division of Forestry will again conduct gypsy moth surveys in 2006 in cooperation with APHIS and the office of the Kentucky State Entomologist.

#### **Emerald Ash Borer**

Trapping in 2005 produced no (0) captures. Additionally, major interstate rest areas and campgrounds were checked for declining ash trees. In 2006, several sites will be used to set up traps extending from northeastern Kentucky along the Ohio River to Louisville, Kentucky. Also, rest areas and campgrounds in Kentucky will be monitored.

#### **Hemlock Woolly Adelgid**

To date, no evidence of this insect pest has been reported in Kentucky. Nearly 1,100 acres were surveyed in the fall of 2005 with additional acreage to be surveyed in late February/March 2006.

### **Diseases: Non-Native**

#### **Sudden Oak Death**

42 samples from 30 physiographic regions within the state were negative for *Phytophthora ramorum*. This study was conducted by the University of Kentucky Plant Pathology department in conjunction with the Kentucky Division of Forestry.

#### **Dogwood anthracnose**

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This disease is [s]till prevalent in Kentucky. No significant changes in spread or degree of this disease have been reported.

### **Declines/Complexes**

#### **Oak Decline**

Reports of oak decline continue to increase. It is anticipated that the number of trees affected will continue to increase since the combined biotic and abiotic factors over the last few years have led to favorable development of this complex.

End of McClure Report

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Results of monitoring of insects and disease is updated annually and available on the Forest Health Monitoring website:

<http://www.fs.fed.us/r8/foresthealth/index.shtml> The website states:

The southern pine beetle (SPB) is Kentucky's most significant [native] forest insect pest. In 2004 [and 2005], SPB activity was minimal, in large part due to host depletion in the eastern part of the state.

**Native Invasive Species** - The two-lined chestnut borer (a component of oak decline) is causing damage and mortality in scattered pockets of oak throughout the national forest. Since NFS lands are within the natural range of this insect, no specific source of this native insect can be mapped.

Mortality is a natural process that occurs constantly within every forest. As the average age of stands on the DBNF increase, increased mortality is expected until average mortality rate levels off with average growth rate. Other than this slight annual increase, no significant change has occurred since FY 2004 in the frequency of native insects or disease.

#### **Non-Native Invasive Species**

**Fiscal Year 2005** - Stiltgrass (*Microstegium vimineum*) was tracked in a few locations. This species is highly invasive in moist soils and readily moves as seed imbedded in soil. Footwear, tires, paws, hooves, and treads all can move the species around. It also spreads by flowing water. Three white-haired goldenrod sites have become infested with the species. Three white-fringeless orchid sites are known to be infested with the species. Of these, all three white-haired goldenrod sites and two of the white fringeless orchid sites were checked (found) in FY 2005. The weed is present in small amounts similar to previous years at the goldenrod sites. The weed is in large numbers at the two orchid sites.

Forest wide, numerous other non-native invasive species (NNIS) are known to be present: musk thistle (*Carduus nutans*), crown vetch (*Coronilla varia*), sericea lespedeza (*Lespedeza cuneata*), tree-of-heaven (*Ailanthus altissima*), princess tree (*Paulownia tomentosa*), Asiatic bittersweet (*Celastrus orbiculatus*), sweet clovers (*Melilotus alba*, *officinalis*), autumn olive (*Elaeagnus umbellata*), Chinese silver plume (*Miscanthus sinensis*), bush honeysuckle (*Lonicera maakii*), Japanese bamboo (*Polygonum cuspidatum*), air potato (*Dioscorea polystachya*), mimosa (*Albizia julibrissin*), kudzu (*Pueraria montana*), Japanese honeysuckle

(*Lonicera japonica*), privet (*Ligustrum sinense, vulgare*), Oriental smartweed (*Polygonum caespitosum*), and multiflora rose (*Rosa multiflora*).

Of these, mimosa, privet and tree-of-heaven appear to be increasing at the south end of the forest, based on observations of numbers and size of populations. No hard data was collected in 2005 on these species. Asiatic bittersweet, Chinese silver plume, bush honeysuckle and autumn olive appear to be on the increase at the north end of the forest, based on observations of numbers and size of populations. No hard data was collected in 2005 on these species.

Non-native insects of greatest concern include the Gypsy Moth (*Lymantria dispar*) and Hemlock Woolly Adelgid (*Adelges tsugae*) (HWA). In 2005, Gypsy Moth Traps were placed in 289 locations in Kentucky, 76 of which were on the DBNF. No moths were attracted to and caught in the traps. Two moths were caught in 2004 at Dale Hollow Lake. No HWA were found in Kentucky in 2005 from the Kentucky Division of Forestry's monitoring efforts. The HWA has been found in Virginia, West Virginia, and Tennessee and is likely to appear in Kentucky within the next year or two.

Other non-native insects that may eventually become a problem on the Forest include the emerald ash borer (*Agrilus planipennis*), and the Asian long-horned beetle (*Anoplophora glabripennis*).

Non-native diseases that are still causing tree dieback and/or mortality on the Forest include Chestnut blight fungus (*Cryphonectria parasitica*), dogwood anthracnose (*Discula destructiva*), and Dutch elm disease (*Ophiostoma ulmi*). Butternut is being killed on the Forest by *Sirococcus clavigignenti-juglandacearum*, a fungus most likely introduced from outside of North America. It is now difficult to find a butternut tree on the Forest that is not infected.

Another non-native disease that could eventually become a problem on the Forest is Sudden Oak Death (*Phytophthora ramiformum*), which is currently causing extensive oak mortality in California. The disease can be transmitted through its alternative rhododendron host, which is often shipped around the country in nursery stock.

The goldenrod sites have been weeded yearly for 2-3 years. It appears that removing plants before they can set seed has prevented an increase in the number of plants at each site. Plants encountered now are presumed to have come from seed in the soil seed bank which is known to persist for up to 7 years for this species. The orchid sites have not been weeded in the past and the population of the grass has increased for an undetermined number of years. Weeding needs to begin at these sites.

Mimosa and tree-of-heaven were seen in greater numbers in flower in FY 2005 than in previous years. It is from this information that it is presumed on the increase. Privet has become more noticeable along roadsides and it is assumed that there are more and bigger plants present. Asiatic bittersweet was found a couple of times in 2005 where it had not been seen before; these are presumed

to be new infestations. Chinese silver plume is occurring along trails as small 2-3 stemmed plants. These are new infestations, not more than 2-3 years old, so it is spreading along disturbed areas. Both bush honeysuckle and autumn olive are appearing along roadsides and trails as small 2-3 year old plants, indications of new infestations.

No data exist to determine trends in invasive plants this point in time.

Monitoring for higher than normal levels of tree mortality and for signs of gypsy moth and hemlock wooly adelgid will continue during field inventory. Where high levels occur, causes will be determined and plans will be made for control. Gypsy Moth trapping will continue.

**Fiscal Year 2006** - Stiltgrass (*Microstegium vimineum*) was tracked in a few locations. This species is highly invasive in moist soils and readily moves as seed imbedded in soil. Footwear, tires, paws, hooves, and treads all can move the species around. It also spreads by flowing water. Three white-haired goldenrod sites have become infested with the species. Three white-fringeless orchid sites are known to be infested with the species. Of these, all three white-haired goldenrod sites and two of the white fringeless orchid sites were checked in FY 2006. The weed is present in small amounts similar to previous years at the goldenrod sites. The weed is in large, but reduced numbers from 2005 numbers at the two orchid sites. Removal of seed producing plants was undertaken near one goldenrod site. Removal of non-seedling plants occurred at three goldenrod sites.

Forest wide, numerous other non-native invasive species (NNIS) are known to be present: musk thistle (*Carduus nutans*), crown vetch (*Coronilla varia*), sericea lespedeza (*Lespedeza cuneata*), tree-of-heaven (*Ailanthus altissima*), princess tree (*Paulownia tomentosa*), Asiatic bittersweet (*Celastrus orbiculatus*), sweet clovers (*Melilotus alba, officinalis*), autumn olive (*Elaeagnus umbellata*), Chinese silver plume (*Miscanthus sinensis*), bush honeysuckle (*Lonicera maakii*), Japanese bamboo (*Polygonum cuspidatum*), air potato (*Dioscorea polystachya*), mimosa (*Albizia julibrissin*), kudzu (*Pueraria montana*), Japanese honeysuckle (*Lonicera japonica*), privet (*Ligustrum sinense, vulgare*), Oriental smartweed (*Polygonum caespitosum*), coltsfoot (*Tussilago farfara*), and multiflora rose (*Rosa multiflora*).

Of these, mimosa, privet and tree-of-heaven appear to be increasing at the south end of the forest, based on observations of numbers and size of populations. No hard data was collected in 2006 on these species. Asiatic bittersweet, Chinese silver plume, bush honeysuckle and autumn olive appear to be on the increase at the north end of the forest, based on observations of numbers and size of populations. Limited hard data was collected in 2006 for some of these species.

Location data for Asiatic bittersweet, Chinese silver plume, autumn olive, crown vetch, multiflora rose, stiltgrass, and coltsfoot were taken in 2006 along Tunnel

Ridge Road and portions of Skybridge Road and Rock Bridge Road. These will be used to track success at removal of these plants.

A volunteer weed pull day was held in the gorge in September, in cooperation with KY EPPC, KSNPC, KDFWR, and Natural Bridge State Resort Park. Weeds were dug and pulled along a portion of Tunnel Ridge Road.

A weed survey of Clifty Wilderness was begun in FY 2006. Data collected will be used to track the movement of weeds in and around the area and serve as the basis for developing eradication/control projects.

The goldenrod sites have been weeded yearly for 2-3 years. It appears that removing plants before they can set seed has prevented an increase in the number of plants at each site. Plants encountered now are presumed to have come from seed in the soil seed bank which is known to persist for up to 7 years for this species. The orchid sites were weeded in FY 2005 and the population of the grass has decreased some as a result. Weeding needs to continue, but will be a continual process without invention regarding the illegal use of a fireline by OHV traffic. This is bringing seed from adjacent private land.

Mimosa, tree-of-heaven and privet in FY 2006 were seen in numbers similar to FY 2005 than in previous years. Without hard data, it cannot be determined if it is different from FY 2005. Asiatic bittersweet was found a couple of times in 2006 where it had not been seen before; these are presumed to be new infestations. Chinese silver plume is occurring along trails and roads as small 2-3 stemmed plants. These are new infestations, not more than 2-3 years old, so it is spreading along disturbed areas. Both bush honeysuckle and autumn olive are appearing along roadsides and trails as small 2-3 year old plants, indications of new infestations. No data exist to determine trends at this point in time.

A test project was begun on the Forest with SRS (Jim Miller) and Institute for Technology Development (Illinois, under contract with NASA) to develop high altitude photo detection for weeds threatening the southeast. A set of flight lines were flown and several ground truthing field trips have been made. The project will continue into 2007 and may allow detection of changes over time.

## **7. What are the status and trends of federally listed species and species with viability concerns on the forest?**

Data collected in FY05 and FY06 include:

- Bald eagle surveys were conducted (both summer and winter) on Cave Run, Laurel River, and Cumberland Lakes.
- White-haired goldenrod site were monitored and a population colony assessment done on the Stanton Ranger District.
- Significant bat hibernacula caves were on Somerset and Stanton Ranger Districts were surveyed in the winter.

- Summer maternity bat site counts were done at Virginia big-eared bat significant maternity caves on the Morehead and Stanton Ranger Districts.
- Approximately 6 miles of stream were surveyed in project areas for shade and cover of aquatic habitats.
- The bay starvine population was checked for condition of plants. Only one portion of the bay starvine population was located in FY05. The larger segment was not found. A research project based at the University of Tennessee used material collected from the Forest in an assessment of population genetics. No analysis has been received yet. Trend data analysis require multiple years of data. Consequently, interpretation and evaluation has not begun. No new sites were found in FY05.
- Five white fringeless orchid sites were checked for condition of plants. No new sites were found in FY05. Two sites, one at London Ranger District and one at Stearns Ranger District showed indications that some plants would flower, and a report in August from the public indicated the London site had produced 100 flowering stems, the most in several years. A least two new infestations of *Microstegium* in or near white-haired goldenrod sites were identified in 2006. One is of sufficient size to require extensive treatment. It is being supplied with seed from road sites above.
- Four butternut sites were reported in FY05 on the Redbird District, two with one tree each, and two with 4 trees each. All trees were alive, and all trees, but one of the single trees had cankers. A research project based at Purdue University began on the Forest in FY06 to look at the genetics of butternut and possible means to combat the butternut canker. Approximately 20 butternut trees were reported to be spread out along about 2 mile stretch of stream corridor in the Indian Creek drainage (Cumberland Ranger District). All trees were alive, and all had cankers.
- A research project based at the University of Cincinnati began on the Forest in FY05 to look at the population biology and life history of sweet pinesap. The researcher located a population of which we were not aware.
- A small population of *Arenaria cumberlandensis* (Cumberland sandwort) planted on the forest in 2005 was monitored in 2006. A few plants had died over the winter, but several were in flower and were growing vigorously. All plants had come from tissue culture stock grown at CREW, Cincinnati Zoological and Botanical Garden.

## 8. What are the trends for demand species and their use?

The tables below reflect sport fish stocking numbers for fiscal years 2005 and 2006. The changes in numbers per individual species result from various management considerations. Accurate trends per species cannot be determined with two years data; however, the constant fact is clear. The Daniel Boone National Forest provides habitat for several sport fisheries. The US Fish and Wildlife Service and Kentucky Department of Fish and Wildlife Resources recognize this fact and are willing to invest the resources required to supplement fish populations.

The rainbow and brown trout totals represent totals of individuals stocked by both USFWS and KDFWR.

*Table 8-1 – Trout stocking summary*

Common Name	Number of Individuals		Water body	District
	FY05	FY06		
<b>Brown trout</b>	450	500	Chimney Top	Cumberland
	700	400	East Fork Indian	Cumberland
	200	0	Slab Camp	Cumberland
	500	500	Bark Camp	London
	250	250	Laurel River Lake Tailwaters	London
	500	250	Laurel Creek	London
<b>TOTAL</b>	<b>2,100</b>	<b>1900</b>		
<b>Rainbow trout</b>	2,000	2,800	Big Double	Redbird
	800	800	Redbird River	Redbird
	2,000	3000	Station Camp Creek	London
	1,000	1000	Sturgeon Creek	London
	700	1400	Craney	Cumberland
	1500	1500	Greasy Creek	Redbird
	900	3800	East Fork Indian	Cumberland
	800	800	Little Double / Fishing Derby	Redbird
	5000	5000	Middle Fork Red River	Cumberland
	1000	1000	Swift Camp	Cumberland
	4700	4000	Tripplett	Cumberland
	4500	4000	War Fork	London
	800	800	War Fork / Fishing Derby	London
	3600	3600	Bark Camp	London
	3900	4900	Cane Creek	London
	17,600	17,600	Rock Creek	Stearns
	6,500	4,500	Mill Creek Lake	London
	3,000	3,000	Laurel Creek	London
	223,932	0	Laurel River Lake	London
	250	250	Laurel River Lake Tailwater	London
8,500	8,500	Cave Run Lake	Cumberland	
11,200	8,500	Cave Run Lake Tailwater	Cumberland	
<b>TOTAL</b>	<b>163,374</b>	<b>80,750</b>		

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Table 8-2 – Buckhorn Lake stocking

Water body	Rainbow Trout		Largemouth Bass		Muskellunge		District
	FY05	FY06	FY05	FY06	FY05	FY06	
Buckhorn Lake	6,000		9,295	12,478	415	450	Redbird
Buckhorn Lake Tailwaters		3,800					Redbird

Note: National Forest System Lands are very limited at Lake Buckhorn. However, for efficiency sake, the above table has been added to this report.

Table 8-2a – Fish Stocking by location and fiscal year

Water body	Channel Catfish		Crappie		Largemouth Bass		Muskellunge		District
	FY05	FY06	FY05	FY06	FY05	FY06	FY05	FY06	
Cave Run Lake					31,795		2,800	2,798	Cumberland
Kentucky River						400,687	85	59,825	Cumberland
Kentucky River, Middle Fork	2,400				52,500		170		Cumberland
Kentucky River, North Fork							140		Redbird
Kentucky River, South Fork							140	51	Redbird
Laurel Creek	1,050								London
Laurel River Lake		#224	74,676	*28,289	56,000	55,989			London
Licking River								3,100	Cumberland
Mill Creek Lake	3,750	1,025							Cumberland
Red River		#545					254	136	Cumberland
Station Camp Creek							15	50	London
Sturgeon Creek							15	50	London
Triplett Creek							75	22	Cumberland
Wood Creek		15,793				6,921			
<b>TOTAL</b>	<b>6,150</b>	<b>17,587</b>	<b>74,676</b>	<b>28,289</b>	<b>140,295</b>	<b>463,597</b>	<b>3694</b>	<b>66,032</b>	

\* Black Nose Crappie

# Blue Catfish

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Table 8-2b – Fish Stocking by location and fiscal year

Waterbody	Hybrid Striped Bass		White Bass		Sauger		Walleye (Native)		Walleye		District
	FY05	FY06	FY05	FY06	FY05	FY06	FY05	FY06	FY05	FY06	
Cave Run Tailwaters										7,220	Cumberland
Cumberland River, Big South Fork				2,000,000						90,726	Stearns
Cumberland River				62,886							London & Stearns
Kentucky River	387			15,734		21,420				15,075	Cumberland
Kentucky River, North Fork										14,938	Redbird
Kentucky River, South Fork										15,310	Redbird
Cumberland Lake	129,546	64,398								849,758	Stearns and London
Laurel River Lake										304,967	London
Licking River										7,595	Cumberland
Rockcastle River							7,972	16,216			London
Triplett Creek, South Fork										706,400	Cumberland
Wood Creek Lake										11,143	London
<b>TOTAL</b>	<b>129,933</b>	<b>64,398</b>	<b>0</b>	<b>2,078,620</b>	<b>0</b>	<b>21,420</b>	<b>7,972</b>	<b>27,359</b>	<b>1,906,448</b>	<b>413,510</b>	

Table 8.3 – Collection permits by product, number and fiscal year

Product	Number Issued in FY 2005	Number Issued in FY 2006
Free use- Research Collections	5	12
Free use- herbaceous Plants	1	0
Free use- sawdust	0	1
Mixed Roots	15	3
Bloodroot	2	2
Ginseng	15	23
Black Cohosh	4	0
Goldenseal	5	6
Moss	4	1
Grapevine	6	5
Posts	5	0
Firewood	28	50

Forest Products: No meaningful trends can be based on two years of data, but three large increases between 2005 and 2006 are evident. There was an increase in the number of

free use research collection permits issued. There was more than a 50% increase in the number of ginseng permits issued between 2005 and 2006. Firewood permits increased by about 79% from FY05 to FY06.

## **9. Are high quality, nature-based recreation experiences being provided and what are the trends?**

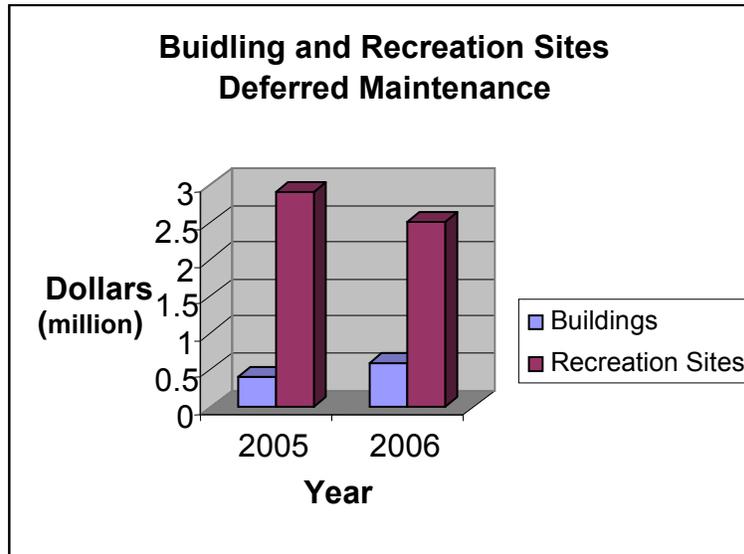
**Facilities Maintenance** - The backlog of facility maintenance needs is estimated to be approximately \$4.7 million dollars. However, this should be considered a rough estimate since data for many sites is only updated once every five years. Data for most GFA recreational use sites on the forest is also not maintained and not included in this estimate. This is the first year of reporting for this element. Therefore, this figure will be used as a baseline for future trends analysis.

**Survey** - The London District is the only district reporting the use of a local customer satisfaction survey tool this year. American Land and Leisure, a private company that operates several campgrounds and recreation sites on Laurel River Lake through a concession agreement with the Forest Service utilized customer comment cards to gather visitor feedback on the quality of services at the recreation facilities they operate. The comment card allowed visitors to rate customer service of campground operators and cleanliness of the facilities based on a five tier rating system ranging from failure to excellent.

Grove and Holly Bay campground were rated good to excellent in almost all categories. Grove boat-in campground rated fair to good in almost all categories, while White oak boat-in campground and Craig's Creek group use area rated good in almost all categories. Public satisfaction with these facilities appears to be good overall. However, numerous visitor contacts to the London district office indicate customers may have had difficulty contacting the concession operators when needed.

**Recreation Facilities Condition** - The condition of recreation facilities across the forest is declining due to the age of the facilities. Many facilities will likely require rehabilitation or replacement within the next 10 years. However, the current condition of the facilities appears to be sufficient in most areas so as to not impact the quality of the recreation experience.

Figure 9-1 – Building and recreation site deferred maintenance



The deferred maintenance chart reflects the total forest deferred maintenance backlog for minor constructed features in recreation sites and all forest buildings. The building data cannot be limited to only recreation site buildings for prior years. Therefore, the building data includes all forest buildings.

This data was generated from the Infrastructure (INFRA) Corporate Data Warehouse. Recreation sites and buildings are surveyed once every 5 years. Therefore, the data does not actually represent current maintenance needs for many of the facilities. Due to the 5 year time delay in updating needs for some sites, the INFRA data reflected here is not an accurate tool for estimating backlogged maintenance needs or the quality of the recreation experience provided.

Field observations indicate the quality of many recreation facilities is continuing to decline. Most of the Forest recreation facilities are 30 to 40 years in age and are reaching the end of their life cycle. Therefore, a decline in quality of facility is being observed across the Forest. However, the highly developed campgrounds at Cave Run Lake and Laurel Lake appear to be in better condition than most of the other non-revenue generating sites.

The forest improved facilities at selected sites in 2006. Examples of improvements include repairs at Koomer Ridge Campground Amphitheater, replacing the roof at Craigs Creek shelter, installing new fishing piers at Goodwater Pond, and replacing several old pit toilets or SSTs with vault toilets across the forest.

*Table 9-1 – Available funding for recreation FY2005 - FY2006*

Fiscal Year	Appropriated Funds	Appropriated Funds Plus Recreation Fee Revenues, Earmarks, and Capital Improvement Project Funding	Average Annual Inflation Rate
2005	\$1.9	\$3.5	3.39%
2006	\$2.1	\$2.6	3.24%

Note: Dollar amounts are rounded to the nearest million. Source of funding data is 5/24/07 report from R8 Metrics Data Library. Source of inflation data is inflationdata.com.

This table illustrates the amount of appropriated funding allocated to the Daniel Boone National Forest recreation program for fiscal years 2005-2006. It also illustrates additional special project funds which are allocated for improvements in selected sites. These funds are usually intended to reduce deferred maintenance needs or to address special needs not accounted for in the annual cost illustrated in the table below. The additional funds identified in the appropriated funds plus column are usually targeted for specific sites due to the nature of the congressional authorities under which these funds are authorized. Therefore, they are not available to address the overall annual needs of the recreation program.

*Table 9-2 – Estimated cost of providing quality recreation experiences in FY2006*

Annual Cost	Estimated Cost of Managing Recreation Opportunity to Agency Standards for Providing a Quality Recreation Experience
Recreation Sites	\$1.3 million
Dispersed Recreation Sites	Unknown
Trails	\$2.3 million
Wilderness	Unknown
Wild and Scenic Rivers	Unknown
Interpretation	Unknown
<b>Cost to Reduce Backlog of Maintenance</b>	<b>\$3 million</b>

Appropriated funding levels remained fairly constant between 2005 and 2006,. Estimated annual costs exceed the appropriated funding level by more than one million dollars. Therefore, funds are insufficient to manage recreation opportunities according to the agency standards that define the services needed to provide a quality recreation experience.

Visitor use data and comments indicate trails and developed recreation sites are of primary interest to most of our user groups. Therefore, funds are prioritized for recreation sites and trails. Many of the needs of managing dispersed opportunities such as wilderness are not addressed. The amount of funding

needed to provide quality interpretive and dispersed opportunities has not been fully analyzed due to the limited amount of funding available. However, it is recognized that the level interpretative services and recreation services provided in wilderness areas or other dispersed sites is insufficient to provide a quality experience.

Inflation rates indicate a loss of buying power of .15% since 2006. The quality of recreation experience will continue to decline if appropriated funding levels remain level without an equivalent increase to address inflationary costs. In addition, overhead costs have increased since 2005; reducing the level of funding available for site maintenance.

**Recreation Sites** - A formal review of recreation sites was not completed in FY06. However, staff observations made during site visits and inspections of special use permits indicate that critical standards were met for most developed facilities. Facilities within the Sawyer campground are significantly deteriorated and unsafe. Therefore, this facility remained closed for the 2006 recreation season.

**Trails** - A formal review of all trails was not completed in FY06. However, condition surveys were completed on approximately 50 miles of trails across the forest. The results of the survey indicate critical standards are being met on the trails surveyed. However, maintenance needs, such as replacing waterbars and hardening of wet areas were identified. In most cases, these needs can be addressed through annual maintenance. However, district staff and public comments indicate there may be specific portions of the Forest trail system where significant degradation of the trail system is evident. Two areas on the Forest have been identified as having extensive degradation to the trail system.

Trails in the vicinity of Cave Run Lake have received extensive damage to the tread due to increasing levels of horse use; a use the trails were not originally designed to accommodate. Complaints have been received from the mountain bike user group regarding the condition of the tread. They indicate the damaged tread makes the trail extremely difficult to ride, and in some cases impassable for a bike rider. Field observations indicate sedimentation may also be occurring as a result of damaged trail tread and off trail use.

The Forest has also received a number of complaints regarding trespass of trail riders on private land in the vicinity of Cave Run Lake. Landowners indicate riders camping at private campgrounds are crossing their land unauthorized to access National Forest system trails.

Forest personnel indicate segments of the Redbird Crest Trail may be in need of significant repair to bring the trail to an acceptable standard. Portions of the trail are eroded, gullied and may be impassable to less experienced riders.

**Dispersed Recreation** - A formal review of general forest area dispersed recreation sites was not completed in FY06. However, staff observations during

field work and monitoring of selected general forest area sites indicate that critical standards are not being met in high use areas of the Forest, such as Red River Gorge. Human waste, trash and graffiti are common in this area.

Most dispersed camping appears to be centered around lakes, streams and the Red River Gorge. Other areas of the forest have limited dispersed camping use, with most of the use occurring during the fall hunting season. It is believed that critical standards are being met and a quality dispersed camping experience is being provided in the less heavily used areas of the Forest.

The Stearns District completed designation of dispersed camping sites in the Rock Creek Corridor. District staff indicates they have received positive comments from the public regarding the newly improved sites.

Forest personnel have observed sedimentation, road and trail rutting, and expansion and development of non-system trails in numerous places across the forest. These impacts appear to be attributable to illegal cross-country OHV traffic. Illegal OHV trails have been identified in the Clifty Wilderness area.

**Red River Gorge** - Monitoring of recreation use in the Red River Gorge indicates impacts to heritage and cultural resources continue to occur in this area. The use of rock shelters, cross country travel and development of unauthorized trail systems continues to occur in the Red River Gorge.

Accomplishments in addressing recreation impacts in the general forest area include:

- 1) Continued implementation of the limits of acceptable change (LAC) process and completed additional inventories of dispersed recreation impacts in the Red River Gorge;
- 2) Closure of dispersed camping sites impacting potential TES habitat and reconstruction of several dispersed recreation sites in the Rock Creek corridor to prevent impacts to water quality;
- 3) Increased recreation ethics education through an increased number of visitor contacts in the Red River Gorge, Clifty Wilderness and Beaver Creek Wilderness, and
- 4) Development of a forest-wide communications plan to address illegal OHV use.

Formal data is not available for completing a trends analysis at this time. High quality, nature-based recreation experiences were provided in most developed sites, trails and general forest areas. However, specific high use areas of the forest may not be meeting critical standards and are therefore not providing a high quality recreation experience.

A high density of users and the presence of trash, graffiti and other impacts are reducing the quality of a backcountry or wilderness experience in the Red River

Gorge area. In addition, degraded trail tread may be reducing the quality of experience for mountain bike riders and hikers on trails in the vicinity of Cave Run Lake. OHV users may experience difficult, impassable or hazardous situations when riding the Redbird Crest Trail.

**Accessibility** - The Forest did not receive any complaints regarding accessibility of developed recreation sites and facilities in FY2006. However, the annual program of work identified several projects which will improve accessibility at selected sites across the Forest.

A transition plan for improving accessibility of developed sites was completed in 2004 and is being implemented as funding permits. Examples of accomplishments for FY2006 include: ongoing construction of accessible camping sites at the Boat Gunnel group use area; initiating construction of an accessible amphitheater and toilet at Natural Arch Scenic Area; initiating the planning and design of an accessible fishing walkway at Great Meadows campground; completion of an accessible parking area, kiosk and toilet at Copperas Creek trailhead; installation of an accessible toilet at Clear Creek picnic area and replacing more than 40 deteriorated picnic tables and grills across the forest.

## **10. What are the status and trends of recreation use impacts on the environment?**

**Invasive species** - Stiltgrass (*Microstegium vimineum*) was found in a few locations. This species is highly invasive in moist soils and readily moves as seed imbedded in soil. While the source of origin for these populations is unknown, footwear, tires, paws, hooves, treads and flowing water are all potential vectors of this species. *Microstegium vimineum*, an invasive species, has spread along illegal OHV trails and firelines near a hydrology improvement project on the Stearns district and the Clifty Wilderness on the Cumberland District.

Illegal OHV use of firelines may be encouraging the spread of *Microstegium vimineum* in forested areas. Impacts as a result of recreation activities were not identified in the results of other monitoring elements.

Recreation activities have the potential to spread non-native species such as stiltgrass, (*Microstegium vimineum*). Efforts should be made to educate recreation visitors about non-native species and how they can help prevent the spread. This information could be posted on recreation site bulletin boards and the Forest website pages for recreation activities. A survey for invasive species should be conducted in Clifty Wilderness. This area receives extensive recreation use. A survey would help determine whether populations of non-natives exist and should be treated to protect wilderness values.

**Off Highway Vehicles** - Visual observations were completed in the Sand Lick area where extensive OHV use occurs on old abandoned oil well roads and the Sheltolee Trace national recreation trail. Observations were compared with

photos from a few years prior. It was evident that erosion has increased due to extensive illegal OHV use of the area. The Forest began rehabilitation of Carburetor Hill, the Narrows, Bee Branch, and additional user-created trails in the Sand Lick area.

The Law Enforcement Investigation Management Attainment Reporting System (LEIMARS) data indicates that there were 4,734 reported violations in FY2006. This is an 8% decrease from the 5,191 violations reported in FY2005. The numbers of violations include warning notices, incident reports, mandatory court appearances, and collateral fines. However, many violation codes are used for both recreation and non-recreation activities. Therefore, it is difficult to distinguish how many of the total violations are directly related to recreation. In addition, there are many other variables, such as law enforcement staffing levels, which affect the number of violations reported.

Forest-wide LEIMARS data is not an appropriate method of developing trends data for illegal recreation use. Monitoring methods or databases for accurately determining illegal recreation use do not currently exist. Therefore, meaningful results for this element are not available for trends analysis.

The number of reported violations decreased in FY06. However, it is not feasible to determine whether or not the actual number of violations directly attributable to recreation activities has changed.

## **11. What is the status and trend of wilderness character?**

**Wilderness Trends** - Data for this Monitoring Question was collected during the mid-1990's but has not been collected since. The original results showed that due to the natural buffering capacity of the streams and soil there does not appear to be any impacts from acid deposition. The only exception might be on more exposed, higher elevation sites with lower buffering capacity. More monitoring is needed on these sites.

**Wilderness Values** - Data is not available for FY2005 for Beaver Creek Wilderness. A survey of recreation use of the Clifty Wilderness was initiated in FY2005 but will not be completed until FY2007. Data for Clifty Wilderness will be reported in FY2007. Wilderness trailhead registration data was not collected in FY2005.

Survey and trailhead registration data for Beaver Creek and Clifty Wilderness areas is not available at this time. However, field observations indicate significant evidence of use in the Clifty wilderness. Observations include numerous user developed trails campsites and fire rings, as well as damage to vegetation, heritage resources and apparent sanitation issues. The Forest initiated a survey of recreation impact areas in FY2005 and plans to complete the survey in FY2007. An analysis of visitor use and recreation impacts will be available in FY2006 or FY2007. It is likely that wilderness values are impaired, but may be restored with rehabilitation or managed use of impacted areas.

Recreation use of Beaver Creek wilderness is primarily limited to the fall and spring hunting seasons. However, a survey of impact areas has not been completed. The Forest is planning to develop survey protocol in FY2007 and complete a survey in FY2008 if funding is available. It is unknown at this point if wilderness values are affected in Beaver Creek Wilderness.

## **12. What are the status and trend of Wild and Scenic River conditions?**

There were no Forest Service actions that affected the free flowing conditions of Rock Creek, Cumberland River, Rockcastle River or War Fork **proposed** wild and scenic river segments. Information is not available for the Red River at this time.

Recreation and silvicultural treatments are occurring along the proposed river segments. The following activities occurred in Rock Creek: trash was picked up along 18 miles of river, 3 dispersed campsites were created, 4 dispersed campsites were closed, a portion of Lexton Mountain road was closed due to an impassable slide, check dams and channel liner were installed to reduce erosion near the slide, 45 acres of wildlife mowing was completed, autumn olive was removed from 6 acres, and five fuel reduction prescribed burns were completed. The burns ranged in size from 70 to 700 acres.

Sheltowee Trace Outfitters conducted canoe rental and rafting services in the Cumberland River. A 3,528 acre prescribed burn was also conducted near the Cumberland River.

Rockcastle Adventures operated a canoe livery/shuttle service on the Rockcastle River. Hiking on designated system trails and other dispersed recreation activities continued in all proposed corridors.

These activities are known to have occurred in or near the proposed river segments. However, monitoring was not completed to determine whether these activities are affecting the outstandingly remarkable values. Although monitoring of these activities has not occurred, by nature these activities do not impede or alter the flow of the rivers. Therefore, free flowing conditions are being maintained on proposed river segments. Information was not available to draw conclusions regarding the Red River.

## **13. Are the scenery and recreation settings changing and why?**

Monitoring was not completed in 2005 or 2006 to analyze whether scenery and recreation settings are changing.

## **14. Are heritage sites being protected?**

***National Register of Historic Places*** - In FY2005, thirty-four sites new sites were recorded and evaluated for NR eligibility. In FY 2006, 80 new sites were recorded and evaluated for NR eligibility. Most of the sites were identified and

evaluated as part of Section 106 surveys that are tied to specific projects. No section 110 surveys were undertaken. There is little funding or personnel time available to undertake non-project related inventory.

**Heritage Protection** – In FY2005, 120 sites were monitored and condition assessments completed. In FY2006, 101 sites were monitored and condition assessments completed. Sites in climbing and recreation areas are subject to damage. This situation will not change as long as people are using the Forest. Fencing and signage at sites where impacts have been noted helps reduce the occurrence of additional impacts. Regular monitoring at the most sensitive locations provides the opportunity to monitor the effectiveness of the fences and signage.

**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?**

**Stream Stability** - During a several week period in June 2005, stream substrate was sampled at 20 random sites in the Upper Cumberland basin at the same time that information was collected for *Monitoring Question 5 – Task 17 and Monitoring 5 – Task 18*. The random sites were located on wadeable streams that drained more than 5 square miles. The data was collected, and compiled by crews from the Center for Aquatic Technology Transfer (CATT), a Forest Service research project that is based in Blacksburg, VA. The data from these sites will be used as representative sites that project watersheds can be compared to.

In 2006 monitoring continued across the Forest. During a several week period in June 2006, stream substrate was sampled at 36 random sites in the Upper Cumberland, Kentucky, and Licking basins at the same time that information was collected for *Monitoring Question 5 – Task 17 and Monitoring 5 – Task 18*. The random sites were located on wadeable streams that drained more than 5 square miles. The data was collected, and compiled by crews from the Center for Aquatic Technology Transfer (CATT), a Forest Service research project that is based in Blacksburg, VA. The data from these sites will be used as representative sites that project watersheds can be compared to.

**Stream Temperature** - Temperature probes were installed at several locations (Table 15-1). Comparison analysis cannot be performed until more data has been collected.

Table 15-1 – Temperature probe locations (installed FY2005)

<u>USGS Quadrangle</u>	<u>Latitude</u>	<u>Longitude</u>
Slade	N37.86.232	W083.66.985
Slade	N37.86.258	W083.66.959
Slade	N37.86.220	W083.66.914
Slade	N37.87.156	W083.65.842
Slade	N37.87.351	W083.65.729
Slade	N37.87.131	W083.65.643
McKee	N37.43.951	W083.92.560
McKee	N37.43.943	W083.92.498
McKee	N37.44.055	W 083.92.490
McKee	N37.44.689	W083.94.317
McKee	N37.44.743	W083.94.764
McKee	N37.48.399	W083.92.746
McKee	N37.45.835	W083.92.446

**Watershed Condition** – During 2005 water samples were taken at 4 sites in the Eagle Creek watershed in the Upper Cumberland basin. All 4 sites were associated with the “5C” coal mining permit. Private coal was mined at this location in the 1980’s and the site is currently up for bond release. Results of the water quality monitoring showed impacts to Eagle Creek from acid mine drainage.

Monitoring needs at this site should be done again in FY 2007 and the Forest Service should continue its coordination with state agencies.

During 2006 water samples were taken at 4 sites in the Eagle Creek watershed in the Upper Cumberland basin. All 4 sites were associated with the “5C” coal mining permit. Private coal was mined at this location in the 1980’s and the site is currently up for bond release. Results of the water quality monitoring showed impacts to Eagle Creek from acid mine drainage.

Sediment samples were also taken from 2 ponds on the Cumberland District. These ponds were part of a 1960 - 1980 oil well drilling operation. The results show that the sediments were contaminated with petroleum products.

Monitoring needs at the Eagle Creek sites should be done again in FY 2007 and the Forest Service should continue its coordination with state agencies. Reclamation of the oil well ponds needs to be completed during FY 2007 & 2008.

**State Best Management Practices (BMP)** - Specific information related to State BMPs and Forest Standards were not collected during 2006. However, each Timber Sale Administrator keeps inspection reports and the Forest Timber Sale Contracting Officer does at least one random inspection per District each year.

## 16. What are the conditions and trends or riparian area, wetland and floodplain functions and values?

**Management strategy consistency with riparian guidance** - Several documents were reviewed during 2005 and 2006, and all of the documents were in compliance the 1-E Riparian Corridor Prescription Area standards.

**Riparian Values and BMPs** - The riparian areas of the Forest are within the 1-E Riparian Corridor Prescription Area, classified as Unsuitable for Timber Production. No activities were reported to have occurred in unregulated (unsuitable) forest in FY2005 and 2006<sup>1</sup>.

## 17. How do actual outputs and services compare with projected?

On average, the budget allocation to the forest was 68% of the Forest Plan estimate.

*Table 17.1. – Budget Allocations by Fiscal Year, Daniel Boone National Forest (\$ thousands), (Base Year 2000 using a 3% discount rate)*

Program Area	Forest Plan Estimate 2000	2005	2006	% of Estimate (average)
Planning	1,149	528	369	39%
Recreation	3,655	1,487	1,595	42%
Wildlife	627	638	632	101%
Range	0	0	0	0%
Timber	1,044	601	693	62%
Soil/Water/Air	418	173	209	46%
Minerals	313	289	345	101%
Lands	418	504	358	103%
Engineering	1,149	1,887	1,629	153%
Fire	2,245	1,622	1,459	69%
Forest Health	418	282	152	52%
TOTAL	11,436	8,013	7,441	68%

<sup>1</sup> Source: TRACS database.

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Figure 17-1 - Allocation Comparison - Base Year 2000  
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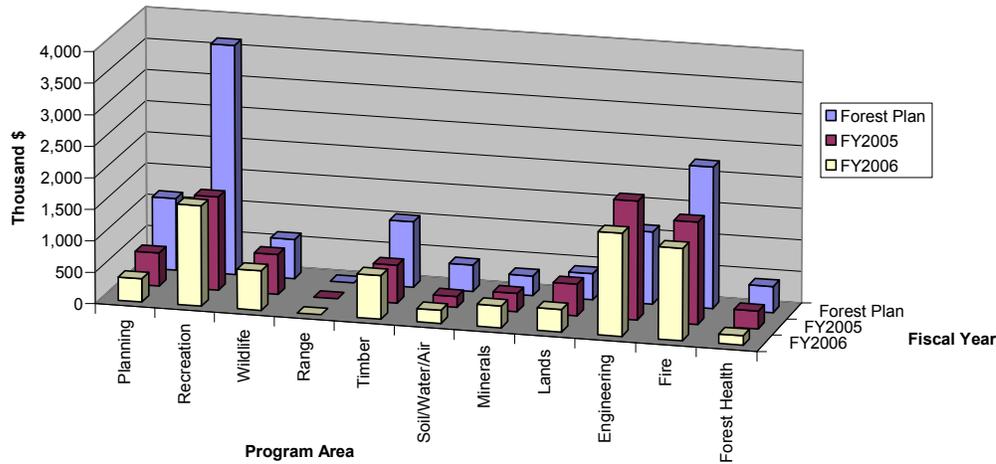


Table 17.2. – Accomplishments Compared to Forest Plan Estimates, by Fiscal Year, Daniel Boone National Forest. (Forest Plan Table C – 2.b.)

Activities	Source	Units	10-Year Objective	Annual Objective	2005	2006
<b>VEGETATION MANAGEMENT</b>						
Total Timber Sales (sold)	Spectrum est.	MMCF	22.9	2.29	0.17	0.26
Regeneration Harvest Area <sup>2</sup>	1.K.1.A., 3.H.1.A.	Acres	18,750	1,553	54	267
Reforestation-Yellow Pine (all)	1.K.2.E.	Acres	8,200	822	603	560
Wooded Grassland Established-Pine	1.K.2.B.	Acres	100	10	0	0
Wooded Grassland Established-Hdwd.	1.K.2.E.	Acres	660	66	0	0
Woodland Established-Pine	1.K.2.C.	Acres	100	10	0	0
Woodland Established-Hardwood	1.K.2.F.	Acres	6,140	614	0	0
Thinning-Forest (60BA) <sup>3</sup>	1.K.1.D.	Acres	5%	900	0	0
Thinning Overstocked Forest		Acres	10,000	0 to 1000	0	0
Pitch Pine Restoration	1.1.D.	Acres	3,000	300	0	0
Upland White Pine Plantations-Conversion		Acres	n/a		0	0
Total Prescribed Burn Acres	EIS, Table 3-15	Acres	379,000	19,000 to 23,000	19,052	17,659

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Activities	Source	Units	10-Year Objective	Annual Objective	2005	2006
Maintain Openings (1600 ac./3years)	1K.1.B	Acres	1,600	533	1689	1579
<b>WATER SOURCES</b>						
Uplands/ridges within 5 miles of significant Indiana bat hibernacula	1.2.B.	structures	1 per 1/2 mi.	n/a	unknown	unknown
<b>SPECIAL COMMUNITIES</b>						
Open Canopy Developed (uneven-aged)	1.E.2.C.	Acres	1075[1%]	107	0	0
Fixed Shrub Openings	1.E.2.B	Acres	1075[1%]	107	0	0
Canebrakes Developed	1.E.2.D.	Acres	1075[1%]	107	0	0
Canebrakes Maintenance		Acres			0	0
<b>WATERSHEDS</b>						
Watershed Improvement	1.E.3.A.,3.B.	Acres	760	120	75	80
<b>RECREATION</b>						
Non Motorized Trails Established		Miles	20	2	0	0
Trails Maintained (BMPs) <sup>4</sup> Inventory user-developed trails	12.1.B	Miles	685	137	278	175
	12.1.C	%	100%	20%	80	112
Address user-developed trails	12.1.C	%	100%	20%	0	0
OHV trails (constructed)	EIS, Table 3-4	Miles	60	6	20	0
<b>ROADS (SYSTEM)</b>						
Construct (Redbird District)	Estimate	Miles	20	2	2.0	0.2
Repair or decommission	12.0.A.	Miles	150	15	11.8	4.3
<b>INTEGRATED INVENTORY</b>						
Forest Inventory	1G.2A & ch.5,#2	Acres	663,682	66,400	15,000	17,000
Assess Rare Communities	1.G.2.A.	Acres	~1200	120	150	150
Assess Designated O.G. Areas	EIS, Table 3-6	Acres	15,331	1,533	0 476 (GRP1), 150 (ICE), 42 (CH)	62 (Jel) 170 (CC), 452 (PC), 200 (SRBR), 190 (JEL)
Assess Possible O.G. Areas	Preliminary Inv.	Acres	18,033	1,800		
Heritage Inventory	6.3.A	Acres	50,000	5,000	1,531	4,651
Heritage Site Evaluation	6.4.A.	Sites	100	10	34	68
<b>LAND ACQUISITION</b>						
Acquisition (10 yr. historic mean)	13.2.A.	Acres	29,000	2,900	1,765	1,005

<sup>1</sup> Based on Constrained EIS Budget, 1st Period.

<sup>2</sup> Includes 1K harvest (cliff/bat/rip/0-10 bug removed) and grouse areas (3H = 8744 ac., with cliff/bat/riparian removed).

<sup>3</sup> 5% of area thinned to 60BA [cliff/bat/rip/0-10 bug removed].

<sup>4</sup> Maintain trails to BMPs, 20% per year.

\* Annual thinning estimates could range from 0 to 1000 acres; based on future inventories, site-specific needs, and other factors.

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## 18. Are silvicultural requirements of the Forest Plan being met?

**Reforestation** - With the exception of a small amount of timber salvaged from roadsides and from administrative areas such as campgrounds, trees that were harvested from the Forest prior to the revision of the LRMP were cut from lands where timber production was the primary objective. Trees cut following the LRMP revision were cut from lands where timber production is a “secondary” objective. In both cases therefore 36 CFR 219.27(c)(3) regulation<sup>2</sup> for reforestation applies to all timber harvest areas that occurred within the past 5 years.

The Forest Activity Tracking System (FACTS, initiated in FY2005) was queried for “reforestation needs” that were created prior to FY2002. The query shows 71,375 acres of reforestation needs. All of these needs are due to insect or disease activity; none resulted from final harvests.

There are no pending reforestation needs created from final harvests that occurred prior to FY2002.

**Forest Plan Consistency** - The Forest Planner reviews all scoping notices prior to going to the public, all NEPA documents prepared for Forest Supervisor approval, and other NEPA documents upon request. For documents containing silvicultural practices, all that were finalized for public inspection were consistent with direction contained in the Forest Plan.

**Harvest Method** - The Forest Planner reviews all scoping notices prior to going to the public, all NEPA documents prepared for Forest Supervisor approval, and other NEPA documents upon request. Forest Staff Officers and resource specialists review the same NEPA documents within their area of responsibility and expertise.

For documents containing harvest methods, all documents that were finalized for public inspection were consistent with direction contained in the Forest Plan and were appropriate for meeting resource management objectives.

## 19. Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?

**Implement Objectives and Standards** - The Forest Planner reviews all scoping notices prior to going to the public, all NEPA documents prepared for Forest Supervisor approval, and other NEPA documents upon request. Forest Staff Officers and resource specialists review the same NEPA documents within their area of responsibility and expertise. Prior to being finalized, NEPA documents consistently include forest plan standards as part of the design criteria. Where appropriate, BMP criteria are included as a requirement of project implementation.

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<sup>2</sup> Note that 36 CFR 219.27(c)(3) calls for adequate restocking with 5 years of “final harvest” not “regeneration treatment”.

***Vegetation Desired Conditions*** - An Integrated Resource Management Strategy (IRMS) is being developed to assess resource management needs consistent with Forest Plan Goals and Objectives. Project development and planning incorporates purpose and needs from the Forest Plan that manages vegetation to provide specific habitat needs. The Forest Planner routinely reviews project documents for consistency with Forest Plan direction. All project decisions issued were consistent with Forest Plan direction.

***Nearby and external applicants*** - External applications to develop powerline corridors and interstate highway corridors continue. Oil and gas prices are up, leading to an increase in requests to develop outstanding and reserved.

***Research:***

**On-going:** See Appendix B.

**Planned:** The Cold Hill Silvicultural Assessment HFRA project is being prepared in cooperation with research.

### III. APPENDICES

#### Appendix A: Summary of Forest Plan Amendments

*Table A.1. – Forest Plan Amendments*

Amendment No.	Date	Responsible Official	Amendment Description
none			

#### Appendix B: Summary of Recent Research Activities

Patricia De Sá sampled for Sudden Oak Death on the forest twice during this period.

Dr. Andrew Simmons, Carleton University, Ontario, Canada, collected pine and hemlock cores and seeds of several weedy species in an attempt to correlate environmental conditions via tree rings to evolution of weedy species.

Gregory Watkins-Colwell, Yale University, collected reptile specimens for the collection at Yale to promote broad regional studies of differences.

Ryan Keplar, Oregon State University, investigated the fungal flora of insects on the forest as part of a larger regional project.

Brian Jorg, Cincinnati Zoo and Botanical Garden, collected vegetative parts of various Trillium species to test the efficacy of establishing tissue cultured stock for eliminating collection pressure on wild populations.

Matthew Valente, University of Tennessee, sampled the forest population of Bay Star Vine as part of a large regional genetic study of the species.

Leith Nye, Missouri Botanical Garden, sampled goldenseal populations on the forest as part of a large regional project looking at genetics of the species.

Matthew Klooster, University of Cincinnati, looked at pollination biology of sweet pinesap on the Forest as part of a larger regional project.

Harold Keller, and students, Central Missouri State University, looked at slime mold flora of trees vs. grape vines on the forest as part of a larger regional project.

Matt White, Indiana University of Pennsylvania, completed the second year of an initial five year study of the effects of canopy alteration on Cerulean Warblers use and nesting success of forested areas with various degrees of canopy modification.

Luke Dodd, University of Kentucky- Lexington, has been monitoring bat use of area with various degree of canopy disturbance; first year of post-treatment data collection. (Study co-located with cerulean warbler study.)

Mary Arthur, University of Kentucky-Lexington, continues to collected data as part of a long-term (over-ten years) study of forest change following multiple prescribed burns on a landscape scale. Data collection in 2006 followed implementation of prescribed burns.

Matt Dickinson, Northern Research Station, conducted study of smoke production and distribution during prescribed burning during growing season burns.

Dan Cox, University of Kentucky, conducted study of bat movement and response during growing season prescribed burns. (Co-located with smoke production study)

**Appendix C: Summary of NFS land by District and by County**

*Table C.1. – National Forest System Land Status as of September 30, 2005,  
 Daniel Boone National Forest (acres)*

<b>COUNTY</b>	<b>Morehead</b>	<b>Stanton</b>	<b>London</b>	<b>Somerset</b>	<b>Stearns</b>	<b>Redbird</b>	<b>TOTAL</b>
Bath	19,386						19,386
Clay						77,947	77,947
Estill		2,265	3,333				5,598
Harlan						803	803
Jackson			59,165				59,165
Knox						74	74
Laurel			63,874				63,874
Lee		5,822	2,765				8,587
Leslie						52,142	52,142
McCreary				41,485	101,186		142,671
Menifee	24,485	22,372					46,857
Morgan	13,030						13,030
Owsley			3,848			12,723	16,571
Perry						2,151	2,151
Powell		15,974					15,974
Pulaski			109	38,186			38,295
Rockcastle			16,364				16,364
Rowan	62,650						62,650
Wayne					1,174		1,174
Whitley			34,018		12,500		46,518
Wolfe		16,563					16,563
<b>TOTAL</b>	<b>119,551</b>	<b>62,996</b>	<b>183,476</b>	<b>79,671</b>	<b>114,860</b>	<b>145,840</b>	<b>706,394</b>

*Table C.2. – National Forest System Land Status as of September 30, 2006,  
 Daniel Boone National Forest (acres)*

<b>COUNTY</b>	<b>Cumberland</b>	<b>London</b>	<b>Stearns</b>	<b>Redbird</b>	<b>TOTAL</b>
Bath	19,386				19,386
Clay				77,947	77,947
Estill	2,265	3,333			5,598
Harlan				803	803
Jackson		59,431			59,431
Knox				74	74
Laurel		64,117			64,117
Lee	5,822	2,765			8,587
Leslie				52,142	52,142
McCreary			142,671		142,671
Menifee	46,857				46,857
Morgan	13,090				13,090
Owsley		3,848		12,723	16,571
Perry				2,151	2,151
Powell	15,974				15,974
Pulaski		23,455	14,840		38,295
Rockcastle		16,765			16,765
Rowan	62,650				62,650
Wayne			1,174		1,174
Whitley		34,018	12,500		46,518
Wolfe	16,598				16,598
<b>TOTAL</b>	<b>182,642</b>	<b>207,732</b>	<b>171,185</b>	<b>145,840</b>	<b>707,399</b>

On December 27, 2005, the Daniel Boone National Forest received approval to consolidate administrative districts from 6 to 4. See the letter that follows.

**File Code:** 1220-3

**Date:** December 27, 2005

**Route To:** (6150)

**Subject:** Approval of Ranger District Consolidations on the George Washington-Jefferson and Daniel Boone National Forests

**To:** Regional Forester, R-8

Your proposal to consolidate four ranger districts to two on the George Washington National Forest (the Dry River and Deerfield Ranger Districts to be called the Dry River/Deerfield Ranger District, and the New River Valley and New Castle Ranger Districts to be called the New River Valley/New Castle Ranger District) has been approved.

Your second proposal regarding the Daniel Boone National Forest, (1) consolidating two ranger districts (the Stanton and Morehead Ranger Districts) into one (the Cumberland Ranger District), (2) abolish the Somerset Ranger District and allocating the land base between the London Ranger District and the Stearns Ranger District, and (3) restructure the Supervisor's Office reducing the number of forest staff officers from 6 to 4, has been approved.

Questions may be directed to Joan S. Ball, Human Resources Specialist (Classification) at (215) 257-3190 or via e-mail to [jball@fs.fed.us](mailto:jball@fs.fed.us).

/s/ Christopher L. Pyron  
CHRISTOPHER L. PYRON  
Deputy Chief for Business Operations

**Appendix D: Estimated Payments to States and Counties**

*Table D.1. – Payment to States and Counties, Daniel Boone National Forest  
 (unadjusted dollars)*

<b>County</b>	<b>2005</b>	<b>2006</b>
<b>Bath</b>	18,633	18,819
<b>Clay</b>	76,032	76,792
<b>Estill</b>	4,712	4,759
<b>Harlan</b>	857	865
<b>Jackson</b>	56,863	57,432
<b>Knox</b>	107	108
<b>Laurel</b>	59,754	60,352
<b>Lee</b>	7,924	8,004
<b>Leslie</b>	52,151	52,673
<b>Letcher</b>	535	541
<b>McCreary</b>	140,391	141,795
<b>Menifee</b>	44,762	45,210
<b>Morgan</b>	12,850	12,979
<b>Owsely</b>	16,063	16,224
<b>Perry</b>	2,142	2,163
<b>Powell</b>	14,243	14,385
<b>Pulaski</b>	32,769	33,096
<b>Rockcastle</b>	13,065	13,195
<b>Rowan</b>	61,789	62,407
<b>Wayne</b>	643	649
<b>Whitley</b>	43,156	43,588
<b>Wolfe</b>	15,956	16,115
<b>TOTAL</b>	<b>675,396</b>	<b>682,150</b>

**Appendix E: Summary of Forest Plan Implementation using an Integrated Resource Management Strategy**

**Fiscal Year 2005** – An interdisciplinary team of resource specialists worked to develop a strategy to perform landscape-scale analysis that implements the Forest Plan.

**Fiscal Year 2006** – A strategy was developed in May 2006. Additional information and a copy of the Integrated Resource Management Strategy (Strategy) can be found on the Daniel Boone National Forest web site at [http://www.fs.fed.us/r8/boone/planning/IRMS/index\\_irms.shtml](http://www.fs.fed.us/r8/boone/planning/IRMS/index_irms.shtml).

Thirty-three landscape areas were identified and a rotation schedule developed that evaluates each area every 11 to 12 years. It is not the intent of the Strategy that all projects are a result of a landscape analysis. Routine activities and unforeseen circumstances can lead to proposing activities at any time.

Implementation of the Strategy began with Beaver Creek and North Red Bird River landscape areas on the Cumberland and Redbird Ranger Districts respectfully. Open-house meetings were held on each district. Resource specialists provided maps and information about the existing condition of these landscapes. Interaction between the public and resource specialists resulted in sharing of ideas, local knowledge and scientific knowledge of local resources.

**Appendix F: Summary of Management Reviews**

None.

**Appendix G: List of Report Preparers**

*Table G.1. – M&E Report Preparers, Daniel Boone National Forest*

Resource Specialist Name	Expertise
Baker, Gene	Engineer
Braun, Richard	Biologist
Finke, Paul	Forest Planner
Gandy, Mitch	Fire and Fuels
Jenkins, Paul Chris	Archaeologist
Kluempke, Mike	Forester
Martin, Pam	Fisheries Biologist
Miller, Corey	Geologist
Stone, Amos	Forester/Silviculturist
Taylor, David	Botanist
Walker, Jon	Hydrologist
Williamson, Myra	Recreation Forester