FY 2016 Annual Monitoring Report and Ten-Year Review of the 2005 Forest Plan

Arkansas and Oklahoma
Fiscal Years 2006-2016
October 1, 2006 - September 30, 2016

United States
Department of
Agriculture

Forest
Service

FY 2016 Annual Monitoring Report and 10-year Review of the 2005 Forest Plan

Ouachita National Forest
Arkansas and Oklahoma

Arkansas Counties:
Ashley, Garland, Hot Spring, Howard, Logan, Montgomery,
Perry, Pike, Polk, Saline, Scott, Sebastian, Yell

Oklahoma Counties:
LeFlore, McCurtain

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Findings of the 10-year Review

Based on information gained through 10-plus years of Forest Plan monitoring, summarized in this report, the Forest Plan Interdisciplinary Team (IDT) identified issues requiring further study and developed recommendations for possible changes to the Plan and Forest Plan implementation. The IDT recommended consideration of Forest Plan changes to address:

An Administrative Change was recommended to the current Forest Plan:

- **Scenic Integrity:** Adjust the Forest Plan during FY18 to remove references to use of a landscape architect to address scenic integrity and to develop a GIS protocol to determine analysis steps and technical requirements based on SIOs and visually sensitive MAs. (See Appendix C for additional detail.)

Areas identified for further investigation and study include the following:

- **Climate Change/Droughts/Floods:** Forest Plan direction may not reflect the latest information on climate change/drought/floods and may not provide the flexibility to be responsive to changes in vegetation and insect/disease activity associated with changing weather patterns.

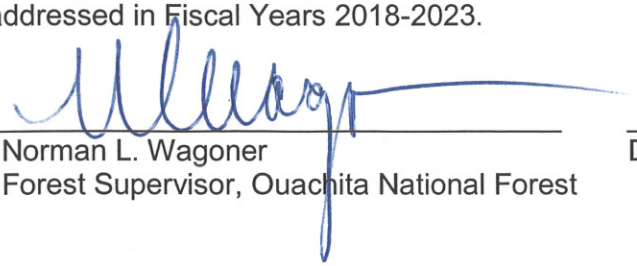
- **ASQ/Suitability:** ASQ identified in the 2005 Forest Plan may not be appropriate with changed conditions such as Management Area 22 reduction in harvest. After 11 years of timber harvest under the 2005 Plan and development of new mapping tools, verification is needed for acres identified as suitable for timber harvest.

- **Early Seral:** Current reporting methods yield results that chronically fail to achieve the Plan objective of creating 5,500 acres/year; however, many specialists believe that much more early seral habitat than what is reported is actually being created. Need for early seral habitat is essentially a wildlife concern; however, monitoring, to date, has not identified species critically imperiled by lack of such habitat. Collaterally, Forest Health specialists have expressed concern that the Forest is aging and will become more susceptible to insect and disease without creation of additional early seral habitat. A silviculture/wildlife study is recommended to review why the level of early seral habitat creation remains so far below the Forest Plan objective. Lack of creation of early seral habitat is not a new issue for the Ouachita NF.

- **Species Viability Analysis:** It is recommended that the SVE analysis be repeated for comparison purposes in the near future.

Determination

Based on monitoring of Forest Plan implementation from December 2005 through September 2016 and the 10-year Review, I have determined that neither conditions on the land nor the demands of the public have changed significantly since 2005. However, the 10-Year Review did identify concerns that could lead to administrative changes to the Forest Plan and to changes in the ways the Plan is implemented over the next five years. These "needs for change" will be addressed in Fiscal Years 2018-2023.



Norman L. Wagoner
Forest Supervisor, Ouachita National Forest

9/25/17
Date

Summary Including Priorities, Recommendations, and Focus Areas

As monitoring results are analyzed, trends are identified. Some trends reveal resource management concerns. Additionally, some focus areas are identified due to new research results. In the following discussions, there is a mix of both monitoring result-driven focus areas and emerging science-driven focus areas. Summaries of the topics are presented in the order they appear in the Monitoring and Evaluation Report. Data are presented by fiscal year, unless noted within the report as being for a calendar year. The fiscal year for the Federal Government (including the Forest Service) is from October 1 of one year to September 30 of the next year.

Summary of the 10-year Review

The 10-year Review summarizes results and identifies trends from the past 11 years of monitoring the implementation of the Forest Land and Resource Management Plan for the Ouachita National Forest (2006-2016). The 10-year Review helps determine if there are significant trends or new information that would indicate a need to change the Forest Plan or adjust implementation activities. Findings of the 10-year Review identify changes that may need to be made to the Plan to alter or better inform management and items such as emerging issues and emerging national/regional policy/direction.

Implementation of the Forest Plan – Project Decisions

Direction in the Forest Plan is used to guide and direct projects for the Forest. Most project level work is implemented by the 5 Ranger District units. In 2016, 650 projects were completed on the Ouachita National Forest for which decision documents were signed. Of the 650 decisions, 126 were accomplished with decision notices and 524 were accomplished with decision memos. The projects addressed every facet of forest management. A list of the project decisions is presented in Appendix B of this report.

Land Ownership and Land Administration

The boundary management accomplishment totaled approximately 56 miles in 2016. To protect land ownership title, 13 encroachments were resolved in 2016.

Land Ownership Pattern and Land Exchanges

Overall, the total of National Forest System lands constituting the Ouachita NF has remained stable, increasing by only 4,710 acres from 2005 to 2016. In 2016, the Ouachita NF purchased 320 acres on the Mena/Oden District and sold 136 acres in Oklahoma. There is likely to be a continued flat or stable trend in National Forest System acreage dependent upon funding levels; however, if there is a need to exchange or purchase additional lands, the Forest will continue to apply the Land Ownership Strategy.

Transportation System and Access Management

During 2016, 1,224 miles of road were operated and maintained to meet objective maintenance levels and classes. Declining road maintenance funding is contributing to difficulties in meeting objective maintenance levels and classes. In addition to maintenance, 10.4 miles of arterial/collector roads were reconstructed (5 roads), but no new arterial/collector roads were constructed. Plus, 37.46 miles of local roads were reconstructed and 15.28 miles of roads were removed from the system (decommissioned) during 2016. Road Maintenance funding for 2016 was $1,202,659 in regular appropriated funds and $3,948,819 in Emergency Relief for Federally Owned (ERFO) roads funds.

Access/Travel Management

The Forest met the requirements of Subpart A of the Travel Management Rule and submitted required products to the Regional Office in September 2015. During 2016, the Forest continued work on Subpart A and expects to publish a report to the web in 2017. The Forest meets the requirements of Subpart B of the Travel Management Rule on an annual basis by publishing 5 Motor Vehicle Use Maps (MVUMs) to the Forest's website. Additionally, the Forest has published a color map indicating which routes are available for motorized travel available at each District.

Bridge Inspections

There are 132 bridges on 73 roads within National Forest System management. Bridge inspections are a continuous process, and each year about half of those bridges are inspected. For 2016, 83 bridges were inspected, and over 92% were found to be free of structural deficiencies.

Facility Operation and Maintenance

The Forest has met its objective of eliminating 3 leased facilities by 2015 with lease terminations for the Tiak (2009), Kiamichi (2015) and Fourche (2015) offices. Land has been purchased for the Cold Springs-Poteau Ranger District; however design and construction have not occurred. Some progress has been made to reduce the footprint of the 5 Ranger Districts, but there is a need to consolidate administrative facilities remnant from the administration of the 12 formerly separate Districts. Each year, at least 33% of the fire, administration and other buildings and some recreation buildings are inspected by the Engineering Section. For 2016, the facility inventory included 338 buildings that were categorized as follows: Existing – Active, Existing – Inactive, or Existing – Excess. Of those 338 buildings, 317 (94%) had a Facility Condition Rating (FCR) rating of "Good" or "Fair." Twenty-one buildings were rated "Poor."

Special Uses

There were 538 special use authorizations of various types in 2016. The total number of road use authorizations issued increased 11% from last year. The overall number of authorizations issued remained constant. In 2016, 395, or 73% of the permits were administered to standard. That is a slight decrease from the 399 administered to standard the year before. Over one-half of authorizations were for road access.

Commodity and Commercial Uses

Minerals and Energy Development

The minerals program manages hardrock mines, as well as operations for sand, gravel and stone; non-energy minerals such as quartz and wavellite; and other energy resources such as coalbed methane and coal. At the end of 2016, there were 19 quartz contracts, 4 quartz leases, 2 wavellite leases, 5 coal-bed methane wells, 1 coal lease-by-application (pending) and 33 common variety mineral materials pits/quarries on the Ouachita NF. In 2016, the number of gas leases on the Ouachita NF decreased to 198, with 17 gas leases terminated in Arkansas during the year. Of the mineral operations, 12 of the quartz contracts, 3 of the quartz leases, 1 of the wavellite leases and 25 of the common variety mineral material sites were actively being mined; although some had only very minimal production. There were quartz mine expansions and two new Plan of Operations approved during 2016. One new quartz contract was nominated in September 2016, but was still being evaluated by the end of 2016. It has not yet gone to a competitive sale. There were no locatable operations proposed and no known mining claims located on the Forest during 2016. The amount of mineral material removed from the Ouachita NF in 2016 increased from 2015, with approximately 19,200 tons of mineral materials being removed. Interest in nominating new gas leases has gone down significantly in the last couple of years.

Livestock Grazing/Range Activities

Over the last 10 years, interest in grazing on the Ouachita NF has generally declined and is not expected to increase in the future. All grazing on the National Forest is in forest and/or woodlands. Number of cattle being grazed is steady; therefore, resource damage from grazing is minimal. The current condition of the range allotments are in line with desired conditions and plan objectives. There were 500 acres of rangeland vegetation improvements in grazing season 2016. Number of livestock was 124 with 3 permittees.

Timber Sale Program

Firewood: Demand for firewood remains fairly high; however, cords of firewood sold in 2016 equaled 715, the least amount since beginning implementation of the Forest Plan in 2006.

Commercial Timber Sales: The ASQ for the Ouachita NF is 27 million cubic feet per year (270,000 CCF). The Ouachita NF has sold an average of 63.29 percent of ASQ over the last 11 years. Volume sold that was chargeable towards the ASQ was 175,126 CCF in 2016 and the total volume sold was 175,715 CCF, just slightly lower than the 10-year average.

Forest Regeneration

The ONF primarily uses natural regeneration to propagate stands of native species and provide early seral stage vegetation. Seedtree and shelterwood cuts in Shortleaf Pine/Shortleaf Pine-Oak planned and contracted through commercial timber sales from 2006 - 2016 resulted in 20,272 acres of regeneration.

Air Quality

Within the Ouachita National Forest, air pollutants such as ozone, fine particulate matter, and acidic deposition can cause negative impacts to visibility, as well as water quality and aquatic and terrestrial habitats. Ambient monitoring of fine particulate matter, ozone, and visibility-impairing pollutants occurs on or near the Forest to evaluate any potential effects. Additionally, monitoring of acidic deposition levels occurs nearby and is representative of conditions on the Forest. All data are presented in calendar years.

Particulate Matter

All concentrations levels of particulate matter are below the 24-hour and annual air quality standards.

Ozone

Ozone is a pollutant formed by emissions of nitrogen oxides and volatile organic compounds in the presence of sunlight. At the 2 monitoring sites closest to the Forest (Polk County, AR and Sequoyah County, OK), both monitors were below the National Ambient Air Quality Standard for the last 3 years.

Acidic Deposition

Total sulfur and total nitrogen deposition trends for the Cherokee Nation (Adair County, OK) and Caddo Valley (Clark County, AR) monitoring locations are reported in the Clean Air Status and Trends Network (CASTNET) database. Nitrogen and sulfur deposition rates indicate a steady decrease, for the most part, in acidic deposition.

Terrestrial Ecosystems and Habitat

Desired conditions for each terrestrial ecosystem type are described on pages 6-18 of the Forest Plan. Data regarding these ecological systems were presented in the first 5-Year Review (2010) of the current Forest Plan. An evaluation did not occur as a part of the 10-year, as expected, due to key

vacancies in personnel. This review is dependent upon data being accurately entered into the database of record, FSVeg; and work needs to be accomplished to enable the database to be fully functional and useful for the review of the status of terrestrial ecosystems. Many elements of terrestrial ecosystems, including habitat conditions, ecological restoration, management indicator species, and endangered species, are addressed in other sections of this report.

Vegetation Management

Management Area (MA) 14, Ouachita Mountains-Habitat Diversity Emphasis, consisting of approximately 740,583 acres, and MA 15, West Gulf Coastal Plain-Habitat Diversity Emphasis, consisting of approximately 13,066 acres, were established within the Forest Plan for varied intensities of vegetation management. Vegetation Management in these 2 MAs average 8,340 acres annually. MA 22 is also actively managed, mainly for the benefit of the Red-cockaded Woodpecker, with average annual acres treated of 3,261.

National Forests Restoration

Across the Ouachita, a number of restoration projects are ongoing. Some of the largest and highest profile projects are the Collaborative Forest Landscape Restoration Program, the Joint Chief's Initiative, and Good Neighbor Authority.

Collaborative Forest Landscape Restoration Program (CFLRP)

Since its inception in 2012, direct CFLPR funding has totaled $9,108,796 and has been matched by collaborator contributions of $9,390,452. At the end of the fifth year of implementation, 233,204 acres had been cooperatively treated with prescribed fire and 332,124 CCF of timber volume had been sold.

Joint Chiefs' Landscape Restoration Partnership

An initiative, formed in 2014 and called the Western Arkansas Woodland Restoration Project joint venture, is a partnership between the US Forest Service (USFS), Natural Resources Conservation Services (NRCS), and Arkansas Forestry Commission (AFC). This Project is paving the way for private forest landowners to better manage their forested lands, with overwhelming interests from landowners joining this effort. This restoration effort is a 3-year initiative focused on glade and woodland restoration as well as soil and water improvements. Approximately $8.5 million was spent from Joint Chief's Landscape Restoration Partnership funding as well as $1.5 million in funding from other sources within and outside the Forest Service and the Natural Resources Conservation Service. Approximately $4.5 million was spent on National Forest System lands and $5.5 million on private lands through NRCS (funds available to landowners adjacent to National Forest System lands to improve and restore glade and woodland habitat on their property).

Good Neighbor Authority

The Good Neighbor Authority allows the Forest Service to enter into cooperative agreements or contracts with States to perform watershed restoration and forest management services on National Forest System (NFS) lands. Congress expanded the Good Neighbor Authority (GNA) with the FY2014 Appropriations Act and the 2014 Farm Bill. The GNA authority was not used in 2014: however, under funding that was requested in 2015, work began under this authority in 2016.

Soils

Over 418 acres of soil restoration was accomplished in 2016 compared to 304 accomplished in 2015. The Forest Soil Scientist retired prior to 2016; therefore little analysis of this data has been accomplished.

Fire Influences and Fuels

For 2016, 130,283 acres were credited to the prescribed fire program. Under the cooperative agreements (Wyden Amendment or the Steven's Act) prescribed burning by the Arkansas Forestry Commission totaled 2,326 acres on lands adjacent to or within the Ouachita National Forest in 2016.

Terrestrial Non-native Invasive Species (NNIS)

The Ouachita NF collects data on invasive species infestations and enters that data into the Natural Resource Information System (NRIS) database. The NNIS inventories have been completed on 35,466 acres of wilderness inventory on 4 of the 6 wilderness areas within the Forest: Dry Creek, Poteau Mountain, Blackfork, and Flatside. The Ouachita NF has treated, on average (2011-2016), 377 acres of non-native invasive species per year. This exceeds the treatment of 300 acres per year in Objective 3 of the Forest Plan. In 2016 there were a total of 384 acres of non-native invasive plants treated and a total of 16,163 acres of inventory completed.

Insects and Disease

The ONF continues to participate in annual southern pine beetle (SPB) trapping that attracts and forecasts SPB activity as well as the SPB prevention program that targets pine stands in need of thinning to keep them below the volume and spacing requirements known to contribute to SPB spot growth (timber loss).

The ONF is also concerned with the invasive emerald ash borer. As of the end of 2015, 6 counties in south central Arkansas had positive trap catches and those counties plus other buffer counties are now quarantined for the movement of hardwood timber products, including firewood.

Terrestrial Habitats (Seral Stages)

Early Seral Stage

The Forest Plan objective is to create 5,500 acres of early seral stage (grass/forb) habitat per year using even-aged methods. Forest-wide, less than 24,000 acres of early seral habitat have been created since 2005 (when the Plan was revised), averaging less than 3,000 acres per year. For 2015, 1,271 acres were created and for 2016 only 674 acres of early seral habitat was created.

Mid-Seral Stage

Mid-seral vegetation is tracked in FSVeg as a transitory stage between early and late seral stages; however, there are no species of concern that are considered obligates of this vegetation condition. This structural condition is prime for pole timber production and is a precursor to sawtimber production.

Late Seral Stage

The late seral vertical structure condition provides habitat and forage for a suite of habitat specialists such as the Scarlet Tanager and Cerulean Warbler that specifically require tall trees, as well as habitat generalists. From 2005 to 2016, the Forest increased in the late seral stage by about 35% (153,134 acres).

Other Terrestrial Wildlife Habitat Components

Cave and Mine Habitat

During mine surveys in 2016, 8 northern long-eared bats, *Myotis septentrionalis* (a newly listed federal species) were identified in a single location. This is 4 more than were inventoried during 2015. Mine habitat has been gated with bat-friendly gates.

Mast Production

There were 421,072 acres of hardwoods greater than 50 years old in 2014 compared to a slightly larger number of acres (423,961) in 2012-2013. No report was received in 2015, but for 2016 acres of hardwoods greater than 50 years old had increased to 588,246.

Habitat Capability Modeling

Modeling habitat capability using the Computerized Project Analysis and Tracking System (CompPATS) wildlife model and vegetative data from the Field Sampled Vegetation (FSVeg) is a tool to evaluate and estimate acres of suitable habitat to sustain healthy populations of native and desired non-native wildlife species on the Ouachita NF. Generally, this habitat capability modeling takes place each year; however, due to lack of personnel with knowledge to run the model, the Forest was unable to complete habitat capability modeling for 2015. CompPATS was completed for 2016, but on a very compressed timeframe due to other Forest priorities.

Terrestrial Management Indicator Species and Wildlife Habitat Management

The Forest Plan identified 7 terrestrial MIS—all are bird species with the exception of white-tailed deer: usually the Forest runs a model called the habitat capability model that uses several variables to estimate habitat capability available in the Forest to support various species. These reports were not prepared for 2015 and data were not available for Eastern Wild Turkey, Northern Bobwhite (Quail), Pileated Woodpecker, Prairie Warbler, Red-cockaded Woodpecker Scarlet Tanager, and White-tailed Deer.

Eastern Wild Turkey

Habitat capability was not calculated for 2015, but for 2016, it was estimated at 14,734 acres. Overall, the Forest should have habitat to support numbers exceeding the minimum population objective of 3.3 turkeys per square mile (9,177 turkeys) for the first period (10 years) of the Forest Plan.

Northern Bobwhite

Estimated habitat capability for the Northern Bobwhite has been relatively stable since 2006, with a slight decrease after 2008. It is still far from reaching the projected 2015 desired Forest-wide habitat capability of 101,748 based on the Forest Plan EIS, due to lagging creation of early seral habitat. For 2016, available habitat was capable of supporting 57,628 Northern Bobwhite Quail.

Pileated Woodpecker

Based on reports from 2006-2015, the Pileated Woodpecker and its habitat appear to be secure within the Ouachita NF. There are no indications of a need to alter management direction.

Prairie Warbler

Based on the data available, the Prairie Warbler shows a slight downward (but not statistically significant) trend since 2006 with a drop in 2011 where it remained through 2014. In 2016, both the habitat and the Land Bird Monitoring indicates another drop likely due to the limited amount of early seral habitat. Throughout the Prairie Warbler range, a downward trend is indicated.

Scarlet Tanager

The Landbird Points data collected from FY 2006-2016 suggest an overall decreasing trend for the Scarlet Tanager; however 2016 showed the highest number of tanagers since 2010. The population is stable, and the trend is not statistically significant. Variances be due to natural variability.

White-tailed Deer

The estimated habitat capability for deer is slightly below the range of the desired habitat capability of 38,105 acres for 2015. For deer, the CompPATS habitat capability model places a greater value on early seral stage habitat and gives lesser value to habitat created by thinning and prescribed fire. In contrast to the declines in even-age regeneration cutting and site preparation, the acres of thinning and prescribed fire have increased over the last 5 years. For 2016, the Forest Plan Projected 38,303 deer and the CompPATS model indicated 37,814 individuals, a difference of less than 500 individuals and only 1 percent less than the Forest Plan calculation. There appear to be adequate habitat, and there are no indications of a need to alter management direction other than to increase creation of early seral stage habitat.

R8 Sensitive Species and Terrestrial Species of Viability Concern

Species are categorized as being “sensitive” due to their endemic or restricted range and/or current or predicted downward trend in population numbers and/or available habitat that would raise concern about their long-term viability. The following species listed on the Regional Forester’s Sensitive Species list are regularly monitored:

Bald Eagle

Surveys in 2014 on the Ouachita NF showed known nest sites at Irons Fork Lake, Lake Ouachita and North Fork Lake and confirmed nest successes at the North Fork Lake and at a new site, Hatchery Lake near High Point Mountain. No new nest sites were reported for 2015 or 2016.

Caddo, Rich, and Fourche Mountain Salamanders

The Oklahoma Ranger District surveyed 100 acres for Rich Mountain salamanders in 2016 and found 7. The average for the previous 5 years was 3. One additional Rich Mountain salamander was found during surveys for the Rich Mountain slit-mouthed snail.

Rich Mountain Slit-mouth Snail

No Rich Mountain slit-mouth snails were found during searches of 8 sites in 2016.

Sensitive Bats - Eastern Small-footed Bat and Southeastern Myotis

The Ouachita NF initiated a bat acoustic survey protocol in 2009 to monitor bat population trends and assess the impacts of White Nose Syndrome (WNS) on the summer distribution of bats. See the “Bats and White-Nosed Syndrome (WNS)” section under “R8 Sensitive Species and Terrestrial Species of Viability Concern.” While 22 Southeastern Myotis were

found to occur in Chalk Mine during the 2014 mine monitoring efforts, none were discovered during 2016 monitoring. Monitoring occurred in 5 mines (2 separate surveys/mine) in 2015 and 10 mines in 2016.

Terrestrial Proposed, Endangered, and Threatened Species Habitat

Proposed, Endangered and Threatened species include all federally listed species where their ranges include part or all of the Forest. There are 12 federally listed species that are considered as occurring on or potentially occurring on the ONF, and 6 are terrestrial species:

American Burying Beetle

In 2014, 36 transects were monitored using the current USFWS protocol for a total of 155 trap nights. No ABBs were captured on either Oklahoma or Poteau/Cold Springs Ranger Districts in 2014. Surveys were conducted in 2016, but no ABB were reported as captured.

Indiana Bat

No surveys were conducted at Bear Den Cave in 2016. Previous surveys at Bear Den Cave found 25 and 5 Indiana Bats in 2010 and 2012, respectively. Data from the Indiana Bat Recovery Team and other sources in the scientific literature show there are no records of this species reproducing within the Ouachita Mountain Regions of Arkansas or Oklahoma. Indiana bats typically travel north from Ozark Mountain summer maternity sites and winter hibernacula.

Bats and White-Nosed Syndrome (WNS)

The Ouachita NF initiated a bat acoustic survey protocol in 2009 to monitor bat population trends and assess the impacts of White Nose Syndrome (WNS) on the summer distribution of bats. Arkansas became the 23rd state to confirm WNS in bats in May 2014. Currently, WNS is found in 26 US states including northwest Arkansas within the caves on the Ozark NF. On the Ouachita NF, WNS was detected in 2015 at 1 location (Spillway Mine). During 2016, 2 sites that were tested (Sleeping Child and Spillway Mines) both came back positive for swabs, indicating the presence of the WNS fungus. Bats in Hog Pen Mine, Charlton Mine, Monte Cristo Mines, and Chalk Mine were also tested for the presences of white-nose fungus, but these tests came back negative.

Least Tern and Piping Plover

During 2016, Least Tern numbers were well below the 10-year average, with only 18 being documented. This number was about 50% less than the 10-year average of about 50 individuals. During 2016, no Piping Plovers were documented at Red Slough and that is not unusual.

Northern Long-eared Bat

During mine surveys in 2016, 8 Northern Long-eared Bats (a newly listed federal species) were identified in a single location. This is 4 more than were inventoried during 2015.

Red-cockaded Woodpecker

The Red-cockaded Woodpecker (RCW) is both a federally listed endangered species and an MIS for the Ouachita NF. RCW active territories increased from a low of 11 territories in 1996 to 70 active territories in 2014. Active territories are holding steady at about 60 per year. During 2016, 32 nesting attempts were made.

American Alligator

After 2015 surveys of the American alligator on the Oklahoma Ranger District located 3 alligator nests, a record for a single nesting season, the Oklahoma Department of Wildlife Conservation recorded an all-time high of 32 alligators on their spring 2016 survey. Six alligator nests were recorded for 2016.

Missouri Bladderpod

Missouri Bladderpod, a Threatened species, was monitored in 2013 and in 2015. During the 2015 review, 2 new populations were discovered. Neither monitoring review found indications of disease or damage. No additional monitoring was conducted in 2016; however monitoring will be conducted at intervals to monitoring Forest populations of Missouri bladderpod.

Wildlife Management Considerations

In addition to managing for species viability and health, the Ouachita NF actively coordinates with the Arkansas Game and Fish Commission (AGFC) and the Oklahoma Department of Wildlife Conservation (ODWC) on all matters related to wildlife management.

Hunting

Hunting is permitted anywhere on the Ouachita NF except within developed recreation sites or otherwise posted areas. All state hunting and fishing regulations, fees, and seasons apply on National Forest System lands. Hunting with dogs is not allowed on Ouachita FS System lands within Wildlife Management Areas (WMAs) managed by either the AGFC or ODWC. Hunting with dogs is still allowed on the general forest area of the Ouachita NF in Arkansas. Game retrieval using OHVs is permitted in certain areas only (contact a District Office for a map of such areas).

Walk-In Turkey Areas

There are 9 Walk-In Turkey Areas on the Ouachita NF, 7 in Arkansas and 2 in Oklahoma: Sharptop Mountain, Leader Mountain, Hogan Mountain, Fourche Mountain, Deckard Mountain, Shut-In Mountain, Chinquapin Mountain, Blue Mountain (OK) and Well Hollow (OK). Walk-In Turkey Areas were established at the request of turkey hunters who desired opportunities to hunt on public lands free of disturbance from motor vehicles.

In OK, 5 food plots each (or 10 acres/Area) are annually maintained in Well Hollow Walk-In Turkey Area and Blue Mountain Walk-In Turkey Area both within the Ouachita WMA, managed cooperatively with the ODWC. During 2016, the NWTF assisted in improving available wild turkey habitat through funding 98 acres of midstory reduction in the Well Hollow Mountain Walk-in Turkey Hunting Area. In the McCurtain WMA, the NWTF contributed prescribed burning funding for the benefit of eastern wild turkey habitat.

Wildlife Management Areas

In Arkansas, 3 WMAs are managed by the AGFC cooperatively with the Ouachita NF by Memorandum of Understanding (1968) between the land-managing parties for the benefit of the hunting public.

Caney Creek WMA (85,000 acres) occupies portions of Howard, Montgomery, Pike, and Polk Counties. Maintenance for 2016 included mowing 125 acres and planting 70 acres of wildlife food plots.

Muddy Creek WMA (145,000 acres) is located in Montgomery, Scott, and Yell Counties. Maintenance for 2016 included mowing 324 acres and planting 114 acres of wildlife food

plots. AGFC moved the maintenance schedule to a 3-year rotation due to funding limitations. Additionally, maintenance was conducted on 16 gates.

The Winona WMA (174,000 acres) is located on lands in Garland, Perry, and Saline Counties. Maintenance for 2016 included mowing 320 acres and planting 108 acres of wildlife food plots. Food plot maintenance in the Winona WMA was moved to a 3-year rotation due to limited funding.

In Oklahoma, there are 3 WMAs on the Ouachita NF, jointly managed in cooperation with the ODWC. Oklahoma is unique for the Ouachita NF in that all National Forest System lands within the 2 counties in Oklahoma are contained within WMAs.

All of the National Forest System lands within LeFlore County are contained within the **Ouachita WMA – LeFlore Unit** (221,948 acres). In the Ouachita WMA – LeFlore Unit, 45 acres of wildlife openings were maintained in 2016. Midstory reduction treatments also took place on 237 acres in the Walker Mountain Old Growth Restoration Area and 417 acres within the American Burying Beetle Area.

All of the National Forest System lands within McCurtain County are contained within either the **Ouachita WMA – McCurtain Unit** (127,191 acres) or the **Red Slough WMA** (5,814 acres). Within the Ouachita WMA – McCurtain Unit, the ODWC managed McCurtain County Wilderness Area (MCWA) was cooperatively burned with the Ouachita NF. A total of 2,636 acres were burned, of which 1,153 were within the MCWA. ODWC assisted with monitoring and maintenance of the only active red-cockaded woodpecker cluster on the Oklahoma Ranger District. The Red Slough WMA is cooperatively managed by the Ouachita NF, Natural Resources Conservation Service (NRCS), and ODWC. The Red Slough WMA bird surveys through 2016 revealed a total of 320 bird species. Activities accomplished during 2016 include providing 54 tours, removal of 72 feral hogs and 17 beavers, treatment of 760 acres with prescribed fire, and disking of 401 acres.

Riparian and Aquatic Ecosystems and Habitat

Riparian and aquatic associated ecosystems comprise approximately 16% of the Forest, and are managed within designated Streamside Management Areas (SMAs) to protect and maintain water quality, productivity, channel stability, and habitat for riparian-dependent species. The desired condition is that watercourses are in proper functioning condition and support healthy populations of native species.

Aquatic Management Indicator Species (MIS)

Aquatic species are divided into Pond, Lake and Waterhole MIS and Stream and River MIS. There are 14 fish MIS associated with stream and river habitat, and 3 pond, lake and waterhole MIS (17 fish species total). These MIS are monitored and serve as representatives for other species. A complete list of the MIS species is found on page 58 of this report. Periodically, the specialists of the Ouachita NF prepare a separate Management Indicator Species Report. The last such report was completed in November 2008 and is available at the following location: www.fs.usda.gov/ouachita.

Pond, Lake, and Waterhole MIS

There are 3 pond, lake, and waterhole management indicator species (MIS) and these species are reported on a calendar year basis rather than a fiscal year basis: Bluegill, Largemouth Bass, and Redear Sunfish. Gizzard Shad is not a designated MIS species, but it is discussed because it is potential hazard to a sustainable sport fisheries in Cedar Lake, Oklahoma.

Bluegill

As sampled in all years through 2016, Bluegill populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question. No management changes are indicated by monitoring results.

Largemouth Bass

As sampled in 2016, Largemouth Bass populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question. No management changes are indicated by monitoring results.

Redear Sunfish

The spring electrofishing seasons in the past several years have been characterized as wet springs with temperatures cooler than normal with the result that sunfish spawns have been missed. As sampled in 2016, the Redear Sunfish populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question. No management changes are indicated from monitoring results.

Gizzard Shad

The Gizzard Shad population is very large in Cedar Lake, to the detriment of the sport fishing species. In consultation with the Oklahoma Department of Wildlife Conservation (ODWC), a reduction program of large Gizzard Shad was initiated to try to encourage more reproduction/ recruitment of smaller sizes of Gizzard Shad to serve as forage for the Largemouth Bass and crappie in the lake. Trends in the Gizzard Shad population will continue to be monitored by gill netting and electrofishing in order to detect changes in abundance and length frequencies within the Gizzard Shad population.

Stream and River MIS

There are 14 species of fish associated with stream and river habitat. Monitoring for these MIS is to determine how well the stream and river aquatic habitat conditions are being maintained or enhanced.

Data indicate that the following populations within the Ouachita NF are at suitable and sustainable levels, and their viability is not in question:

- Smallmouth Bass
- Green Sunfish
- Longear Sunfish
- Yellow Bullhead
- Northern Hog Sucker
- Highland Stoneroller
- Creek Chubsucker
- Striped Shiner
- Northern Studfish
- Orangebelly Darter
- Redfin Darter
- Pirate Perch

Johnny Darter

Johnny Darters are more typically found over fine gravel and sand substrates. The early winter of 2015/2016 had some significant storms that would have cleaned the substrates

for good spawning conditions. However, more significantly the period of late winter to early spring had stable to diminishing flows that apparently were highly conducive to Leopard, Johnny and Channel Darter survival with increased counts shown during the summer 2016 counts.

Channel Darter

The 2015/2016 water year with no flooding during the darters' spawning and larval recruitment periods likely resulted in the increased counts for the Channel Darter as well as the Johnny and Leopard Darter. Overall trend lines for Channel Darters have shown a downward trend that is beginning to level off. The trend line for the Channel Darter is statistically significant.

R8 Sensitive and Other Aquatic Species of Viability Concern

Ouachita Darter

Forest Service snorkel surveys for Ouachita Darters have not been conducted in the last 3 years due to diminished staff, time associated with training on the Watershed Interactive Tool (WIT) data base of record and low water flows. There are Ouachita Darters in the stretch of the Ouachita River that flows through the Ouachita NF; larger populations are found further downstream particularly at and right above the backwaters of Lake Ouachita, likely on U.S. Army Corps of Engineers' or private lands.

Aquatic Dependent Proposed, Endangered, Threatened, and Sensitive Species and Habitat

Listed Freshwater Mussels

There were no specific freshwater mussel surveys conducted on the Ouachita NF during 2014; however, a few mussel surveys were conducted in 2015 and the Fish and Wildlife Service gathered data for a study of mussels in 2016. A report on this effort has not been received.

Leopard Darter

Leopard Darters have undergone a 5-year Status Review by the US Fish and Wildlife Service and results have been released with no recommendation to upgrade or downgrade the listing classification. Snorkel counts for Leopard Darters in 2016 resulted in the highest median count since the permanent transect surveys started in 1998. The trend line for the annual pooled counts of Leopard Darters is not statistically significant, and the data indicate that the populations are experiencing natural variations. There is a newly perceived threat to Leopard Darter survival of inadequate genetic variation between and within populations, which is under further scrutiny and will require additional monitoring plus possible translocation of Leopard Darters between populations to increase genetic variation.

Harperella

Three known sites of harperella were monitored by the Forest Botanist. These sites in include sites on each of the following: Fiddler Creek, Irons Forks, and the North Fork Ouachita. The populations continue to fluctuate from year to year due to drought and flooding events. In 2016 the habitats in the 3 sites were similar in size and numbers from the past and no known threats to the habitat were observed.

Other Aquatic Habitat Considerations

Game Fish Habitat

For 2016, annual Channel Catfish stocking continued in most managed recreational fishing waters in close coordination with the fish and game agencies of each state. In 2016, additional fish sampling was continued to monitor the Gizzard Shad population at Cedar Lake, and control measures were again undertaken as it appears the Gizzard Shad population continues to keep game fish populations in Cedar Lake from obtaining their optimal growth. The control measures, with limited sampling, appear to be helping to shift some of the Gizzard Shad biomass to smaller-sized shad that are more optimal for game fish consumption.

Aquatic Habitat Enhancement Activities

In 2016, 15.35 miles of fish passage and sediment reduction/control was accomplished, mostly funded with Federal Highway Administration's flood restoration dollars and with Joint Chief's Woodland Restoration funding in the Wolf Pen Gap OHV Area. Replacement of a fish barrier stream crossing on Big Hudson Creek in Oklahoma was also funded with USFWS Aquatic Organism Passage funding and Timber Stewardship funding. The number of waterholes created in 2015 was 63 with an additional 15 rehabilitated for continued use. In 2016, reported waterholes developed were 13 (Cold Springs/Poteau did not report for this item).

Watershed Function and Public Water Supply

Public water supply surface sources with lands on or near the Forest include Broken Bow and Wister Lakes in Oklahoma and the following source areas in Arkansas: South Fork Reservoir (Cedar Creek), Iron Forks, and James Fork Reservoirs; Hamilton, Nimrod, Ouachita, Waldron, Winona, and Square Rock Lakes; and the Caddo, Middle Fork Saline, Ouachita, Petit Jean, and Saline (eastern) Rivers. A primary mission of the Forest Service is to promote practices to protect and enhance public water supplies.

Herbicide Monitoring

In 2016, one stream was monitored twice on the Mena/Oden RD for the presence of the herbicide glyphosate and its derivative AMPA below treated stands. Lab results indicate that the glyphosate and AMPA were not detected in the samples submitted.

Recreation

Abundant opportunities exist for the public to use and enjoy the Ouachita NF. Areas or facilities reported in this section include those MAs having special emphasis on recreation and/or scenery and include developed recreation sites, semi-primitive and wilderness areas, and trails.

Fee Sites

In 2016, $223,087 was collected at 9 fee sites. During 2015, $172,613 was collected at 14 fee sites.

Trails

Hiking is permitted anywhere on the Ouachita NF. Primary trail-based opportunities occur in the Wolf Pen Gap OHV area (motorized trail riding), along the Ouachita National Recreation Trail, on the Cedar Lake Equestrian trails system in Oklahoma, the International Mountain Bicycling Association (IMBA) Epic Womble Mountain Biking and Lake Ouachita Vista Trails (LOViT). Mountain biking continues to be one of the most important niches that the Forest can support. Currently, the Forest provides over 200 miles of single-track trail for mountain bike enthusiasts. Demand for OHV riding opportunities is high on the forest, and such demand presents management challenges to provide OHV riding places, protect natural resources, and balance recreational needs for quiet and solitude within the Ouachita NF. During 2016 no new miles of trail were constructed but over 260 miles were maintained.

Recreation Participation

A preliminary forest-level visit estimate obtained from the National Visitor Use Monitoring (NVUM) for 2015 is 1.189 million visits to the Ouachita NF per year. This is an increase from the 2010 estimated 1.067 million visits on the ONF annually. Based on the 2015 NVUM program, overall satisfaction ratings were very high – over 80% of visitors to the Ouachita NF were very satisfied with their overall experience.

Wilderness

There are 6 wilderness areas totaling approximately 64,469 acres located within the Ouachita NF: the Black Fork Mountain Wilderness (AR and OK); Upper Kiamichi (OK); and Caney Creek, Poteau Mountain, Dry Creek and Flatside (all in AR). Possible future wilderness additions were studied during Plan Revision and additions to 3 existing wildernesses were recommended: Flatside Wilderness, East Unit of Poteau Mountain Wilderness and Upper Kiamichi Wilderness. Recently, public interest has been expressed in adding additional area to the Flatside Mountain Wilderness.

Public and Agency Safety

The Ouachita NF is staffed by 7 full-time and 2 "reserve" Law Enforcement Officers (LEO). In 2016, the Law Enforcement and Investigation (LE&I) unit for the Ouachita NF administered 6 Cooperative Law Enforcement Agreements that support local county law enforcement assistance in Arkansas and Oklahoma. LEOs responded to or assisted with 29 accidents within/adjacent to the Ouachita NF. These numbers include minor injuries (sprains, dog bites, etc.), ATV, motorcycle and motor vehicle accidents. Nineteen accidents were motor vehicles, 4 ATV accidents, a single motorcycle accident and 5 personal injury/other accidents. There were a logging fatality and 2 suicides reported. Fourteen separate search and rescue (SAR) operations were conducted during 2016 for lost hikers and hunters. During 2016, LE&I investigated 7 assault cases.

Heritage Resources and Tribal Relationships

Heritage Stewardship

During 2016, the State Historic Preservation Officers of Arkansas and Oklahoma and several tribes agreed to extend for another year the existing programmatic agreement (PA) with the Forest Service (Ouachita and Ozark-St. Francis National Forests), an agreement that provides guidance on implementation of the National Historic Preservation Act Section 106 procedures on these national forests. A new PA is drafted and consultation is ongoing (OBJ22). The new draft PA streamlines Section 106 consultation and implements the new Forest Service National Heritage Program Management Strategy.

In 2016, 30 projects, including watershed scale timber sales with associated actions, were completed. Consultation on these undertakings occurred with one or more state historic preservation officers, one or more state archeologists, and with 6 tribal historic preservation officers for the Choctaw, Chickasaw, Quapaw, Caddo, Wichita, and Osage nations. This year, 22,406 acres were surveyed and 92 archeological sites were identified or revisited. Following consultation on determinations of National Register eligibility, 31 sites were protected from project impacts. Additionally, 107 projects met stipulations of the current PA, held no potential to impact archeological sites, and were processed as categorical allowances.

Priority Heritage Assets (PHAs) are heritage sites with public value that meet certain criteria. PHAs are monitored on a 5-year rotation. For 2016, the Ouachita had 192 archeological and historic sites on the

PHA list. Twenty-nine PHAs were actively monitored and 7 PHAs were managed to standard. Other heritage assets including structures and archeological sites may be potentially important, however, they are currently unevaluated or do not have a demonstrated need for active maintenance.

Archeological collections are Priority Heritage Assets. In 2016, additional efforts were made to prepare collections for curation. A total of at least 499 volunteer hours were donated in this effort equating to a dollar value of $5,523.93. Curation activities are ongoing.

Additionally, in 2016 heritage staff conducted public outreach at 8 venues including a flint knapping demonstration; history and archeology programs for the Ouachita Chapter of the Arkansas Archeological Society; and by staffing booths at county fairs. An informative display on prehistoric use of novaculite was set-up in Mt. Ida. Arkansas Archeological Survey archeologists published an article on the joint FS/AAS project at the Dragover Site. A map display of the routes of the Cherokee Trail of Tears was developed, and Ouachita and Ozark St. Francis personnel published an article on development of the joint programmatic agreement.

Tribal and Native American Interests

From April 11 to April 14, 2016, the 15th annual TBAG meeting was hosted by the Coushatta Tribe in Kinder, Louisiana. Karen Diver, special assistant to the president for Native American affairs was the keynote speaker. The 2016 meeting featured more than 254 registered attendees representing 15 federal agencies, 23 Tribes, and 32 contractor/state organizations. The Forest Service hosted an on-site recruitment event for recent graduates to apply through the Pathways Internship Authority. Eleven individuals were hired.

From June 15-17, 2016, heritage paraprofessional training was conducted at the Oden Ranger Station in Oden, Arkansas. ONF heritage personnel served as trainers, collectively instructing 29 individuals including 10 members of the Choctaw and Osage nations. Many of the tribal consulting partners now have heritage paraprofessional programs and under Forest Service and tribal participating agreements, some tribal members conduct heritage surveys on the ONF.

Contributions to Social & Economic Sustainability

The Ouachita NF is important to many local economies in terms of providing employment, ecosystem services, products, services, recreation visits, contracting, and other sources of revenue that then multiply economically within local communities. The economic influence of the Ouachita NF has remained fairly stable over time. In addition to contributions to the social fabric and economic bases of local communities from timber activities, and to a lesser extent mineral activities, the ONF contributes directly to counties under the Secure Rural Schools Act (Payments to Counties) and from payroll and projects undertaken with the FS budget.

Payments to Counties

For 2016, with no Congressional reauthorization of the Secure Rural Schools and Community Self Determination Act (SRS Act), the Forest Service must revert to making payments to States under the 1908 Act, commonly called 25% payments, for the 2016 receipts. USDA Forest Service will process a payment in early 2017. Payments range from from a high of $393,620 to Montgomery County (where nearly 67% of the county is in NFS ownership) to a low of $378 in Hot Spring County (where less than 1% of the County is in NFS ownership).

Budget

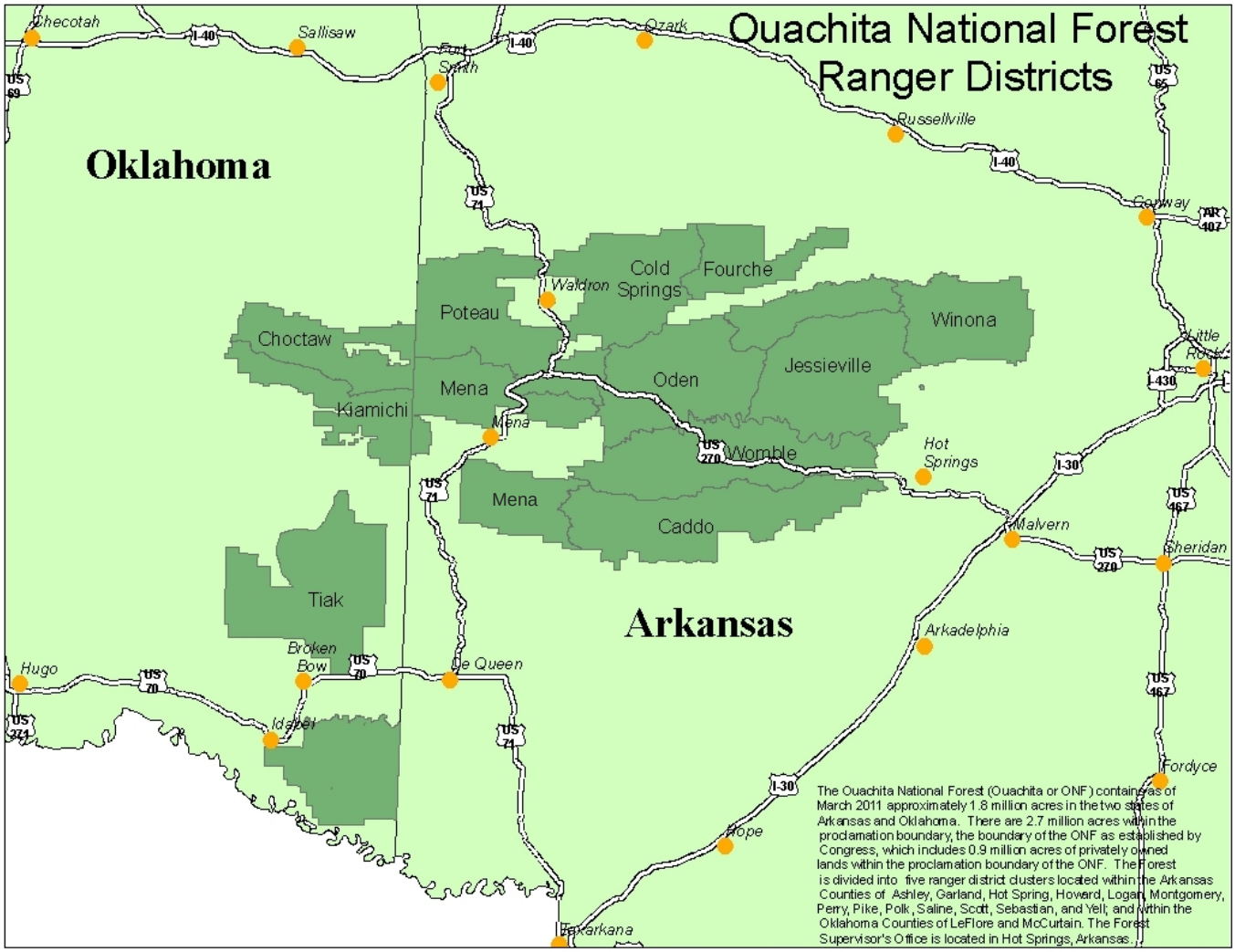
The Forest Plan management areas and standards represent statements of long-term management direction. Such direction and the rate of implementation are largely influenced by and dependent on the annual budgeting process. The NFS budget for 2016 was $10.3 million (without earmarks or returns on receipts of timber sales under the Knutson-Vandenberg Act).

The Ouachita National Forest

The Ouachita National Forest (Ouachita NF, Forest, or ONF) is located in western Arkansas and southeastern Oklahoma and contains approximately 1.8 million acres. There are approximately 2.7 million acres within the boundary of the Forest established by Congress, known as the "proclamation boundary." Privately-owned or State lands within the proclamation boundary total nearly 1,000,000 acres.

The Ouachita NF is divided into 5 ranger district units located within 13 Arkansas counties: Ashley (Crossett Experimental Forest), Garland, Hot Spring, Howard, Logan, Montgomery, Perry, Pike, Polk, Saline, Scott, Sebastian, and Yell; and within 2 Oklahoma counties: LeFlore and McCurtain. The Ouachita NF Supervisor's Office is located in Hot Springs, Arkansas. Individual Ranger Districts are shown in the following map. For administrative purposes, the Ranger Districts are grouped into the following administrative units: Oklahoma; Poteau/Cold Springs; Mena/Oden; Caddo/Womble; and Jessieville/Winona/Fourche.

Ouachita NF Vicinity Map



The 2005 Forest Plan

In December 2005, the Ouachita NF completed a Forest Plan revision incorporating the amendments of the previous 15 years and streamlining the management direction within the Forest Plan. The Forest Plan provides the framework to project decisions and implementation. Appendix A lists amendments to the 2005 Forest Plan. The 2005 Forest Plan guides all natural resource management activities for the Ouachita National Forest. To accomplish this, the 2005 Forest Plan:

- Establishes long-range goals (desired conditions) and short-range objectives (generally for the next 10 to 15 years)
- Specifies management prescriptions and associated standards and anticipates the rates or levels of management practices that will be applied
- Establishes monitoring and evaluation requirements that provide a basis for periodic determination and evaluation of the effects of implementing the Forest Plan

Monitoring

The Forest Plan was completed under the 1982 (36 CFR Part 219) regulations (the National Forest Management Act) that guide Forest Service planning at the Forest and national levels. These regulations specify that forest plan…

> *"…implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. Based upon this evaluation, the interdisciplinary team recommends to the Forest Supervisor such changes in management direction, revisions, or amendments to the forest plan as are deemed necessary."*

As the Plan is implemented, "needs for change" are identified through monitoring and evaluation. Monitoring protocols are in place for measurement of progress toward achieving:
(1) desired conditions (2) objectives; and (3) adherence to design criteria at the project level.

A Monitoring and Evaluation Report is completed each year. At about 5-year intervals, results and findings from preceding years' Monitoring and Evaluation Reports are revisited together with monitoring results for the current year to determine if trends are emerging that should be addressed by changes to management. Note the 10-year review expected to be conducted in 2015 was postponed until 2016 when additional staff were in place to assist with the review. Unless otherwise noted, all information is reported by fiscal year rather than by calendar year.

No management plan is "active" unless progress is being monitored.

Purpose of the 10-year Review

The Forest Plan sets out the vision, desired conditions, priorities and objectives as well as design criteria [standards] to achieve the desired conditions and priorities. The Ouachita NF monitors to measure progress toward the desired conditions, priorities, and objectives; however, progress on a landscape scale is usually difficult to ascertain in the short term. The 10-year Review provides a slightly more long-term view and is the process where monitoring information from the first 10 years of Forest Plan implementation is evaluated and compared to determine if there are significant trends or new information that would indicate a need to change the management focus.

Purpose
The purpose of a 10-year Review is "to review conditions on the land covered by the Plan to determine whether conditions or demands of the public have changed significantly " (36 CFR 219.10(g))

Does the Review make decisions? How will the Review be used to change the Forest Plan?
The review of the Forest Plan does not make decisions. It presents an evaluation of the Forest Plan, conditions of the land, and public expectations. The review provides a framework for proceeding with amending or making administrative changes to the Forest Plan, if needed. Changes to the Forest Plan are accomplished subsequent to the completion of the 10-year review.

Implementation of the 2005 Plan

The 2005 Forest Plan (Forest Plan) for the Ouachita National Forest provides broad, strategic direction for managing the land and its resources and sets the context for project development. Site-specific project decisions must be consistent with the Forest Plan and will undergo review for compliance with the National Environmental Policy Act, the National Historic Preservation Act, the Endangered Species Act, as well as any other applicable regulations. The Forest Plan is implemented through project work primarily accomplished at the District level.

Projects Completed Fiscal Years 2006–2016

Decisions to implement management actions fall into two categories: non-documented (categorical exclusions) and documented (environmental assessments or environmental impact statements). Some routine management actions do not require documented decisions, such as road and trail maintenance. Other actions that may affect the human environment such as timber harvest and prescribed burning require documented decisions.

The Planning, Appeals, and Litigation System (PALS) database is used to track project planning and NEPA decision data and to generate the quarterly Schedule of Proposed Actions (SOPA) which is published on the web and available to the public. The decision information used in this report was obtained from PALS.

For fiscal years 2006 through 2016 (10/01/2001-09/30/2016), 650 projects were completed on the Ouachita National Forest for which decision documents were signed. Of the 650 decisions, 524 were accomplished with decision memos and 126 were accomplished with decision notices. Decision notices are prepared for project analyses that are documented in environmental assessments, for example large timber sales. Decision memos are prepared for projects that are categorically excluded

from documentation in an environmental assessment like special use authorizations.

Project descriptors, including activity and purpose, are tracked along with decisions. The tables below summarize project activity and project purpose by number of decisions, respectively.

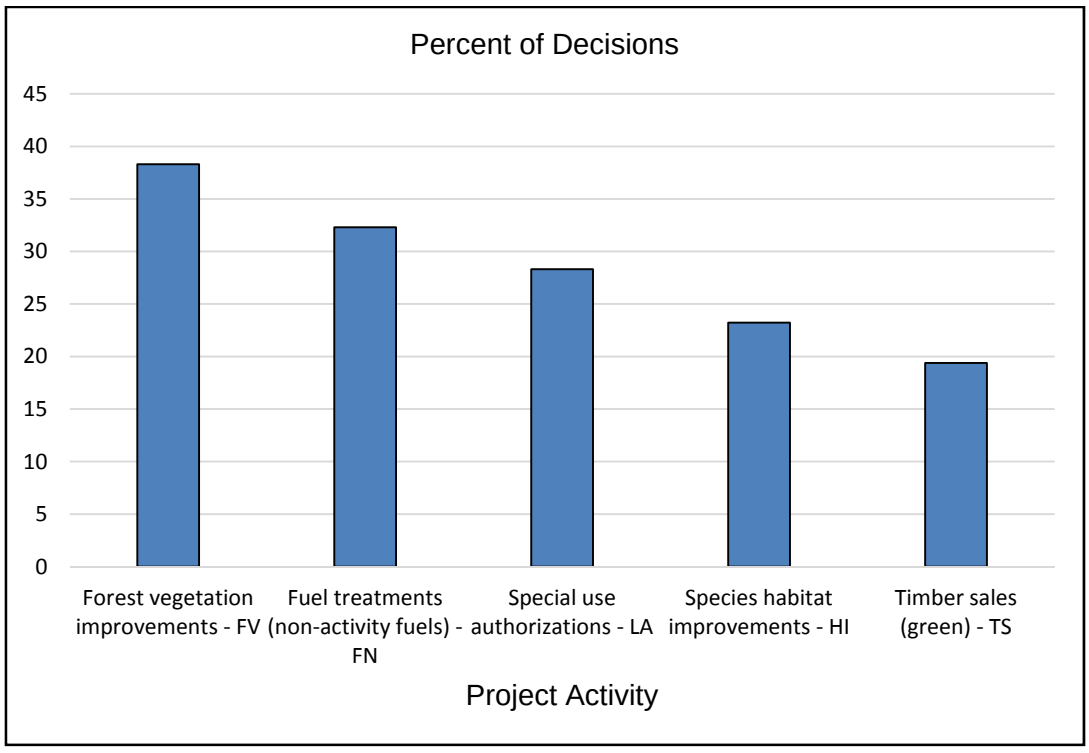
Project Activity by Number of Decisions, ONF, 2016

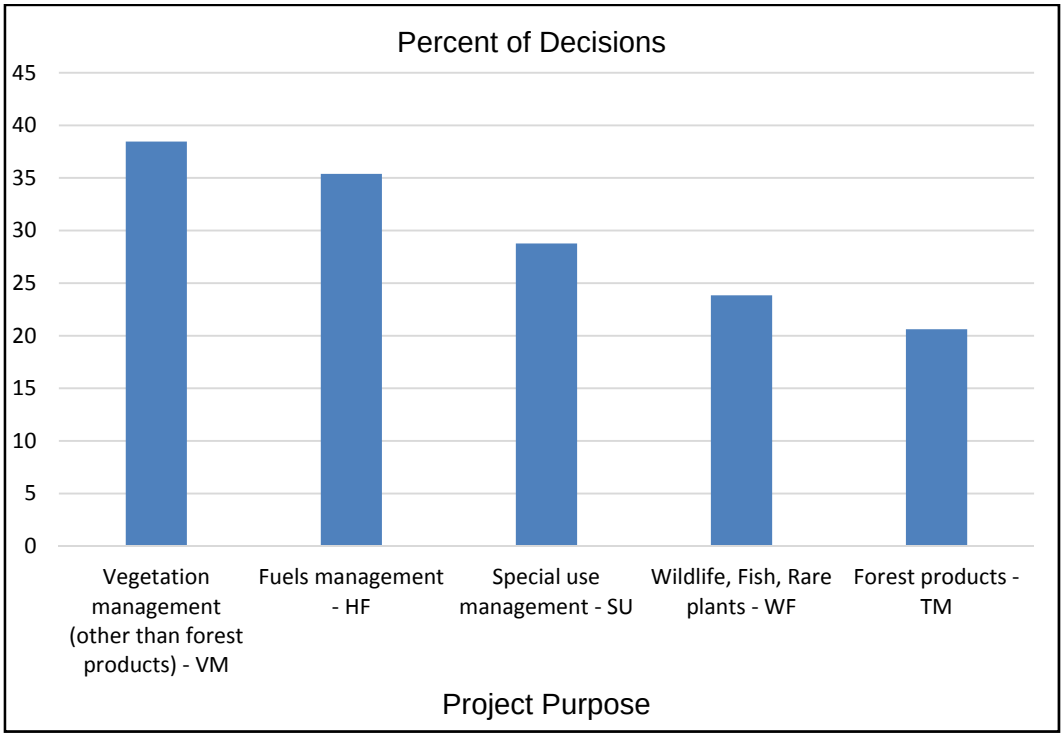
Project Activity	Number of Decisions	Percent of Decisions
Forest vegetation improvements - FV	249	38
Fuel treatments (non-activity fuels) - FN	210	32
Special use authorizations - LA	184	28
Species habitat improvements - HI	151	23
Timber sales (green) - TS	126	19
Road improvements/construction - RI	84	13
Road maintenance - RD	78	12
Watershed improvements - WC	73	11
Heritage resource management - HR	55	8
Timber sales (salvage) - SS	53	8
Road decommissioning - DR	49	8
Travel management - TR	49	8
Dispersed recreation mgmt. - GA	44	7
Noxious weed treatments - NW	43	7
Scenery management - SC	43	7
Species population enhancements - PE	39	6
Trail management - MT	39	6
Minerals or geology plans of operations - MO	32	5
Developed site management - DS	24	4
Special area management - SA	19	3
Facility improvements/construction - FI	13	2
Research and Development - RE	12	2
Land exchanges - PJ	8	1
Special products sales - NC	6	1
Boundary adjustments - BL	5	1
Facility maintenance - MF	5	1
Environmental compliance actions - EC	4	1
Plan amendment - MP	4	1
Roadless area management - RA	4	1
Abandoned mine land clean-up - ML	3	0
Grazing authorizations - GR	2	0
Rangeland vegetation improvements - RV	2	0
Electric Transmission - ET	1	0
Land purchases - LP	1	0
Land use adjustments - AL	1	0
Regulation creation/modification - RC	1	0
Wilderness management - WD	1	0

Project Purpose by Number of Decisions, ONF, 2016

Project Purpose	Number of Decisions	Percent of Decisions
Vegetation management (other than forest products) - VM	250	38
Fuels management - HF	230	35
Special use management - SU	187	29
Wildlife, Fish, Rare plants - WF	155	24
Forest products - TM	134	21
Recreation management - RW	99	15
Road management - RD	90	14
Watershed management - WM	79	12
Heritage resource management - HR	49	8
Minerals and Geology - MG	39	6
Land management planning - PN	21	3
Facility management - FC	15	2
Land ownership management - LM	12	2
Special area management - RU	12	2
Research and Development - FR	11	2
Grazing management - RG	6	1
Land acquisition - LW	2	0

The 5 most common project activities and purposes by frequency (percent of decisions) are illustrated in the following charts, respectively.





Project activities and project purposes are well-aligned, with forest vegetation improvements and vegetation management the most common activity and purpose, followed by: fuel treatments and fuel management; special use authorizations and special use management; species habitat improvements and wildlife, fish, rare plants; timber sales and forest products.

Implementation Monitoring Reviews

In the past 10 years, 2 Implementation Monitoring Reviews (IMRs) have been accomplished—one each in FY 2006 and FY 2007. A third IMR is on-going. It is reviewing the status of corporate databases used for monitoring.

2006 Implementation Monitoring Review

For 2006, an IMR report of standards monitoring was completed as a special long term soil quality monitoring study/report. The soils report was conducted utilizing 1990 Forest Plan Standards and Guidelines and resulted in design criteria SW007 and MG012 being included in the 2005 Forest Plan (pp. 75 and 94, respectively).

2007 Implementation Monitoring Review

For 2007, an Implementation Monitoring Review (IMR) took place at 3 growing season prescribed fires on the Jessieville-Winona-Fourche Districts. The IMR was undertaken to determine whether growing season prescribed fire projects were planned, documented, and implemented in a safe and appropriate manner. Project consistency not only with Forest Plan direction, but also agency, Region and Forest prescribed fire guidelines was reviewed. The general consensus on this Forest

prior to these projects was that large-scale summer burns could not be done without causing severe tree mortality, and these projects proved otherwise.

2015-2016 Implementation Monitoring Review

For 2015-2016, an Implementation Monitoring Review (IMR) was initiated and is on-going to review the status of the databases intended to be the repository for Forest activities and accomplishments. The effort has been interdisciplinary and has required the help of design professionals who are knowledgeable about the design and purposes of Field Sampled Vegetation (FSVeg), Forest Service ACtivity Tracking System (FACTS), and Watershed Improvement Tracking (WIT), in particular.

Desired Conditions and Plan Objectives

Desired conditions describe how the Ouachita NF would look and function as management direction in the Forest Plan is implemented over time. Desired conditions are described using the ecological and/or economic and social attributes that characterize or exemplify the anticipated outcomes of land management, but they are not commitments as it may take substantial time to achieve the desired condition only over the long term.

Objectives provide measures of actions intended to move the Forest in directions that will lead to the achievement of desired conditions. Annual monitoring and periodic evaluation of trends in performance indicators determine if there is a need to shift program emphasis and implementation in order to more effectively move toward the desired conditions. Data are used to determine trends and assess progress. Through repeated measurement, trend lines are established and used to determine if programs should be adjusted or if changes in Forest Plan direction are needed. Annual monitoring results are reported in a monitoring and evaluation report and, every 5 years, in a more comprehensive review document. In this Monitoring and Evaluation Report, progress is measured against prior years' accomplishments and trends over time are evaluated.

Land Ownership and Land Administration

The landownership strategy, included in Part 2 of the 2005 Forest Plan, will be continued.

Land Line Location, Maintenance, or Management

For additional information, contact Charlie Storey at cstorey@fs.fed.us

Forest Plan Objective 17 addresses the need for boundary management. Approximately 923 total miles of National Forest System boundary have been maintained, marked, or obliterated from 2006 through 2016 which is an average of about 84 miles per year. Boundary management was accomplished on a total of 56 miles in 2016. Due to funding and human resource constraints, accomplishing marked boundary lines is more difficult on the Forest. Following is a summary of miles of boundary located or maintained by year since 2006:

Miles of Boundary Located or Maintained, by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Miles	52.58	65.00	135.40	136.50	114.02	105.00	99.75	40.00	56.58	62.00	56.00

To protect land ownership title, 13 encroachments were resolved during 2016. From 2006 through 2016, 91 encroachments, trespass, or unauthorized occupations have been resolved, for an average of 8.3 cases per year. Due to funding and human resource constraints, accomplishing case resolution is more challenging on the Forest. Following is a summary of cases completed to standard by year since 2006:

Cases Completed Protecting Land Ownership Title, by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cases	6	10	13	2	3	4	11	12	9	8	13

Land Ownership Pattern and Land Exchanges

For additional information, contact Jessica Soroka at jasoroka@fs.fed.us

Land purchases, exchanges and conveyances are used to consolidate and simplify National Forest Lands ownership. Consolidation reduces administrative costs and management challenges. The trend in the lands program is to use exchanges to meet Forest Plan goals. In 2016, the Ouachita NF purchased 320 acres on the Mena/Oden District.

Land Program, Acres Purchased by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Acres Purchased	120.00*	120.00	0.00	0.00	27.80	0.00	0.00	0.00	0.00	0.00	320.00

*Previous Monitoring Reports included 2,257 acres for 2006 because acres acquired through tripartite exchanges were counted as purchases when they were actually exchanges. The totals for the rest of the years also have tripartite acres in the exchange portion so now it is consistent.

During 2016, there were no acres were exchanged by the Forest Service. The following data displays acres exchanged since the Forest began implementing the Forest Plan and is highly variable by year.

Land Program, Acres Exchanged by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Acres Exchanged	72.95	3,978.00	0.00	260.00	160.00	260.80	4.00	0.00	161.35	0.00	0.00

The first time that the Forest Service sold National Forest System lands other than by the Small Tracts Act was during 2006. Sales in 2006 were accomplished under PL 108-350 which gave the Forest authority to sell several administrative sites and 3 pieces of National Forest System land. Several (Heavener) residences were sold under a relatively new authority, the Forest Service Facility Realignment and Enhancement Act of 2005. In 2016, the Ouachita NF sold 135 acres in Oklahoma.

Land Program, Acres Sold by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Acres Sold	162.45	9.89	0.00	4.57	0.41	0.00	0.00	0.45	350*	0.00	135.00

*During 2014, 350 acres were transferred to the US fish and Wildlife Service without consideration.

Overall, the total of National Forest System lands has remained stable, increasing only 4,895 acres during the span of 2005–2016. The stable trend in National Forest System acreage illustrated in the following is likely to continue. If there is a need to exchange or purchase additional lands, the Forest will continue to apply the Land Ownership Strategy set out in Part 2 of the Forest Plan.

Land Totals by FY, ONF

Year	Total NFS Acres	Yearly Change
2005	1,784,610	+1,945
2006	1,786,714	+2,104
2007/2008	1,789,690	+2,976
2009	1,789,666	-24
2010	1,789,853	+187
2011/2012	1,789,672	-181/0
2013	1,789,671	-0.65
2014/2015	1,789,320/1,789,320	-351.35/0.00
2016	1,789,505	+185

Land Administration - Emerging Issues

The timber industry has divested large acreages that would have made good additions to the Forest and would have provided greater continuity of ownership; however, acquisition funds are limited. Land acquisition is becoming more difficult due to lack of funding and decreasing staff. With sales of larger timber company tracts to individual owners, lands previously in one ownership are broken up into small tracts; and when there is a need to acquire access for legitimate Forest purposes, there are multiple owners to each negotiation, further complicating processes. In addition, rather than a single access to a single owner, multiple access requests from multiple owners are being received. Each further subdivision further complicates access requests and creates obstacles to Forest acquisition of adjacent parcels.

Pressures from in-holders and those wishing to become in-holders to gain solitude and seclusion are increasing. With diminished ability to acquire such in-holdings, the Forest is unable to acquire

the land with the result that owner requests for access are likely to increase. Increased usages next to or within the Forest are also likely to result in requests to expand roads and utilities, boundary disputes, illegal trails, and encroachments and trespass. With more occupation in and near National Forest System lands, user conflicts and law enforcement issues increase. Highway improvements and extension of water service along the Highway 270 corridor are likely to lead to increased development and pressure in places where private lands adjoin NFS land.

Transportation System, Access Management, and Facility Administration

Transportation System

For additional information, contact Lea Moore at lvmoore@fs.fed.us

The following are Forest Plan objectives for the ONF transportation system:

- *OBJ36: Complete a transportation plan for the Ouachita NF by late 2007 that (among other things) addresses the backlog of maintenance and reconstruction needs.*
- *OBJ37: By 2015, identify all system roads that should be obliterated.*
- *OBJ38: Obliterate 25% of roads identified under the previous objective by 2015 (many such needs to obliterate roads will be identified well before 2015.)*
- *OBJ39: Reduce miles of road under Forest Service maintenance.*

The following table displays the road miles in the database of record for maintenance level categories for 2016.

Road Miles by District and Maintenance Level (ML) 2016, ONF

District	ML1	ML2	ML3	ML4	ML5	Total ML
Oklahoma	475.64	446.81	107.35	0.85	7.19	1037.84
Caddo/Womble	299.11	277.30	121.27	23.20	4.82	725.70
Cold Springs/Poteau	476.91	446.15	264.41	9.47	2.24	1199.18
Jessieville/Winona/Fourche	878.02	566.28	428.41	6.05	1.58	1880.34
Mena/Oden	390.73	248.19	222.22	19.08	2.81	883.03
Forest Totals	2520.41	1984.73	1143.66	58.65	18.64	5726.09

Source: Infra

During 2016, 1,224 miles of road were operated and maintained to meet objective maintenance levels and classes. Declining road maintenance budgets are contributing to difficulties in meeting objective maintenance levels and classes. Also during 2016, 10.40 miles of arterial/collector roads were reconstructed on separate sections of 5 roads. During 2016, no miles of new arterial/ collector roads were constructed. The following shows arterial/collector roads reconstructed for the period 2006 - 2016.

Miles and Number of Arterial/Collector Roads Reconstructed by FY, ONF

Arterial/Collector Roads Reconstructed	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Miles	15.56	6.44	6.44	1.94	7.96	11.35	37.6	0.99	11.8	1.49	10.4
Number of Roads	7	4	4	4	3	3	8	3	15	2	5

Work has been accomplished to reconstruct local roads. During 2016, 37.46 miles of local roads were reconstructed. The following displays local road reconstruction. There is no clear trend related to miles of road reconstructed. Usually available budgets and repairs needed for safety concerns drive road reconstruction accomplishments.

Road (Local) Reconstruction by FY, ONF

Local Roads Reconstructed	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Miles	55.40	34.20	28.17	1.94	13.62	14.71	28.50	13.95	13.77	8.72	37.46

In addition to the 37.46 miles of local road reconstruction during 2016, 6.32 miles of local road construction was accomplished on 9 road sections. The following displays the miles of local roads constructed and added to the National Forest Road system by fiscal year.

Local Road Miles Constructed and Added to the NF System by FY, ONF

Local Roads Constructed & Added to the System	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Miles	15.99	4.28	8.54	21.00	3.29	11.13	5.1	2.21	0.72	0.85	6.32
Number of Roads	22	NR	NR	8	5	11	2	4	2	1	9

There were 15.28 miles of roads removed from the system (decommissioned) during 2016. Each year, there are far more miles of road removed from the system than are added. The following displays the miles of roads removed from the system by fiscal year and the amount of road maintenance funding receive by FY.

Miles of Road Removed from the NF System by FY, ONF

Roads Removed from the System	2006*	2007	2008	2009	2010	2011	2012	2013	2014*	2015	2016
Miles	204.35	12.30	2.70	2.04	0.00	20.70	28.3	28.0	84.33	40.65	15.28

* The seemingly large number of road closures in 2006 was not a result of a management action, rather an administrative correction due to verification of actual road condition and correction in the official database of record. Similarly, another records review during 2014 found additional roads that were not actual forest service jurisdiction and needed to be removed from the database of record.

Road Maintenance Funding by FY, ONF

Road Maintenance Funding by Yr	Regular Appropriated Funds ($)	Emergency Relief ($) for Federal Roads	Funding by year ($)
2012-2013	776,000	0	776,000
2014	285,000	485,000	770,000
2015	1,751,664	2,616,905	4,368,569
2016	1,202,659	3,948,819	5,151,478

Tracking road maintenance funding was initiated in the 2012-2013 M&E Report and will be included in successive reports.

Bridge Inspections

For additional information, contact Gary Griffin at gwgriffin@fs.fed.us

Another facet of maintenance of the transportation system is robust monitoring of bridge conditions through the National Bridge Inspection Standards (NBIS) process. There are 132 bridges on 73 roads within National Forest System management. Bridge inspections are a continuous process, and each year about half of the total number of bridges are inspected. For 2016, 83 bridges were inspected, and over 92% were found to be free of structural deficiencies. Those requiring maintenance have been entered into a maintenance inventory and will be addressed as funding is available or closed if a deficiency becomes a safety hazard.

Due to the lack of funding to replace bridges, deterioration and an increase in structural deficiencies are anticipated as the age of the bridge inventory increases. In addition to inspections, NBIS standards require bridges to be evaluated for safe load carrying capacity via load ratings. The Forest completed 100 bridge load ratings in 2014 and is scheduled to complete the rest of the bridges in 2017. Of those 100 bridges, 14 were determined to have a safe load capacity less than the National standards and were therefore posted for reduced loads. In cases where bridges have posted load limits or reduced capacity due to structural deficiencies, alternative haul routes might be required for timber sales. Alternate haul routes due to posted or structurally deficient bridges has the potential to increase timber sale costs and reduce the viability of timber sales. In some cases, where alternative haul routes are not an option, the cost of bridge repairs or replacement could make some timber sales economically infeasible.

Access/Travel Management

For additional information, contact Alett Little at alittle@fs.fed.us

Development of the Ouachita NF transportation system was substantially completed prior to the mid-1980s. Road reconstruction and construction has traditionally been accomplished through the timber sale program; however, road work in timber sales now is mostly system road maintenance/reconstruction and use of temporary roads accomplished using road purchaser provisions in the timber sale contract.

Funding for road maintenance has essentially remained flat since the early 2000s and has resulted in choices on the level and degree of maintenance needed, such as whether to close roads, or to provide maintenance to surface drainage, culverts, bridges and aggregate surfacing. In 2011 this trend changed to a substantial decrease in available road maintenance funding. This decrease has already reduced on-the-ground work, and this reduction is expected to continue

into the foreseeable future. Decisions about the operational level of all roads and even possible closures will have to be discussed as the Ouachita NF moves forward. Roadside mowing, trimming of large vegetation, and other measures are still necessary for safety, but the limited available funding is not meeting the need. The Forest has not utilized stewardship contracts to address road maintenance, but use of stewardship contracts could be a possibility to address this need.

The Forest Plan objective specific to travel management follows:
OBJECTIVE 26: *"Designate and sign a system of roads and trails suitable for public access by motor vehicles, including off-highway vehicles, no later than October 2009; at the same time, initiate the process to prohibit cross country travel by motorized vehicles except for emergency purposes and specific authorized uses."* This objective was accomplished in 2011 with publication of a series of Motor Vehicle Use Maps that are updated and posted to the web annually. Five Motor Vehicle Use Maps, one for each set of combined Ranger Districts display the routes and, in some cases, seasons designated for motor vehicle use.

An initial draft of the Forest response to Subpart A of the Travel Management Rule that identified the minimum road system was submitted to the Regional Office September 2015. This process helps to initiate or fulfill the process to address OBJECTIVE 38: *Obliterate 25 percent of roads identified under the previous objective by 2015…*

During 2016, the Forest worked to complete Subpart A, Administration of the Forest Transportation System. This subpart requires that every National Forest complete a travel analysis process (TAP) to identify the minimum road system. This document will be complete in 2017. Per 36 CFR Part 212.5(b)(1), "The minimum system is the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219), to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance." The process requires, among other things, a review for access and effects on water quality.

General Trends: With sustained reduced funding levels for road maintenance, serviceability of the road system will continue to decline and could result in a future need for road reconstruction. Currently, 3,111 miles of open system road and 2,592 miles of closed system road exist on the Forest. Because of the work previously completed under travel management planning and the updated spatial data that were produced as a part of that project, it is anticipated that no further changes in the Forest Plan will be required as Subpart A of the Travel Management Rule is implemented. A table showing the Forest inventory of roads by county and Objective Maintenance Level (maintenance level to be achieved at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns) follows.

State - County	Objective Maintenance Level (OML)						
	OML 1 (closed to public)	OML 2 (high-clearance vehicles only)	OML 3 (1-lane native surface)	OML 4 (1-2 lane with gravel or chip-seal)	OML 5 (2-lane Paved)	Traffic Service Level D (Rough and irregular surfaces)	Total
AR - ASHLEY	.0000	.5000	11.4390	.0000	.0000	.0000	11.9390
AR - GARLAND	306.8882	115.9536	59.1190	28.7200	4.0440	.3000	515.0248
AR - HOT SPRING	.0000	2.1000	.0000	.0000	.0000	.0000	2.1000
AR - HOWARD	.5520	.0000	2.2800	.0000	.0000	.0000	2.8320
AR - LOGAN	21.5900	13.4200	21.3710	.0000	.6660	.0000	57.0470
AR - MONTGOMERY	346.2809	275.2805	154.6569	56.8940	1.4147	4.4476	838.9746
AR - PERRY	225.8143	107.9327	123.9590	42.2300	1.2650	2.6100	503.8110
AR - PIKE	35.5868	3.0341	4.1900	.0000	.1352	.0000	42.9461
AR - POLK	172.5479	136.2276	80.4282	1.9640	3.1100	8.4900	402.7677
AR - SALINE	103.4716	50.9440	43.6632	17.4200	.1600	1.2000	216.8588
AR - SCOTT	592.1054	417.8238	275.7375	25.0700	1.7706	.6960	1,313.2033
AR - SEBASTIAN	.0000	8.0930	.0000	.0000	.0000	.0000	8.0930
AR - YELL	320.1023	186.0359	215.3380	27.2260	.1270	.0000	748.8292
State - AR - Total:	**2,124.9394**	**1,317.3452**	**992.1818**	**199.5240**	**12.6925**	**17.7436**	**4,664.4265**
State - County	**1**	**2**	**3**	**4**	**5**	**D**	**Total**
OK - LE FLORE	177.5571	199.4116	98.8430	1.2110	7.2200	.9000	485.1427
OK - MCCURTAIN	289.4266	192.2131	61.3749	.1000	.1670	9.8421	553.1237
State - OK - Total:	466.9837	**391.6247**	**160.2179**	**1.3110**	**7.3870**	**10.7421**	**1,038.2664**
Total AR & OK by level:	**2,591.9231**	**1,708.9699**	**1,152.3997**	**200.8350**	**20.0795**	**28.4857**	**5,702.6929**

Facility Operation and Maintenance

For additional information, contact Garry Findley at gfindley@fs.fed.us

Management Area 8, Administrative Sites/Special Uses, consisting of approximately 551 acres, includes district ranger offices; district work centers; district residences; Forest Service communication facilities and sites for communication facilities under special use permits; and the administrative site within the seed orchard.

Objective 31 of the Forest Plan is to *"Eliminate three leased facilities by 2015."* The leased office for the Tiak Ranger District was eliminated in 2009 after completing and moving into the new Leadership in Energy and Environmental Design (LEED) certified District Office in Hochatown. The leases for the Kiamichi and Fourche unit offices were not renewed in 2015, allowing the Forest to attain Objective 31. The Ouachita NF also acquired land for a new district office for the Poteau/Cold Springs Districts and developed a site plan for the land that was acquired; however, the Forest has not set a date or secured funding for anticipated design or construction of this proposed new office.

Forest Plan Objective 32 is to *"Eliminate 30% of other nonessential administrative facilities by 2015."* Presently, there are 5 Ranger District units, and there is a need to consolidate administrative facilities remnant from the administration of 12 once-separate units. District consolidation plans have not been completed, although they have been considered for 10-plus years. Two administrative facilities were decommissioned and sold during 2009: the Caddo Trailer and the Fourche Ranger Residence. During 2010, 2 additional facilities were decommissioned and were sold. During 2013, the Kiamichi Ranger Dwelling and shed were decommissioned. During 2014, the Caddo District office and work center were closed, appraised, and for 2016, the process for selling these and the Caddo residence is still underway. During 2015, recreation facilities at the Kulli recreation area were decommissioned and the leases for the Fourche Ranger office in Danville, AR and the Kiamichi Ranger office in Talimena, OK were terminated. As leases for office space expire, reviews will determine if there is a need to renew them or if it is more advantageous to taxpayers not to renew those leases.

Objective 33 calls for *"public facilities to [be upgraded to] Architectural Barriers Act standard by 2015."* Facility inspections are undertaken each year. The building inventory has been updated to show which buildings are accessible and which are not, and the work to bring the facilities will be programmed as funding allows. Twenty-four percent of public facilities are now accessible.

Executive Order (EO) 12902, *Energy Efficiency and Water Conservation at Federal Facilities* (March 8, 1994), and Executive Order 13123, *Greening the Government Through Efficient Energy Management* (June 3, 1999), are aimed at requiring each Federal agency to reduce energy use in buildings and to meet the challenge of global warming by reducing greenhouse gas emissions. To meet the requirements of these EOs, Forest Plan Objective 34 states, *"Complete energy efficiency upgrades on all administrative buildings and complete identified work on 10% of administrative buildings needing upgrades by 2015."* The Forest upgraded 3 heating ventilation and air-conditioning (HVAC) systems in offices during 2012 and 2013 to increase efficiency and installed insulation in one office. The Forest contracted an inventory of all HVAC systems and their condition in 2013. Progress toward achievement of Objective 34 is undetermined at this time. Additional focus on becoming more energy efficient at all facilities is now a priority under the Forest Service Sustainable Operations initiative.

Annually, buildings are inspected for compliance with health and safety standards in accordance with Forest Plan Objective 35. Since 2005, buildings inspected by FS Engineering personnel either met or were corrected to meet standard. Each year, at least 33% of the fire, administration and other buildings and some recreation buildings are inspected by the Engineering Section. For 2016, the facility inventory included 338 buildings that were categorized as follows: Existing – Active, Existing – Inactive, or Existing – Excess. Of those 338 buildings, 317 (94%) had a Facility Condition Rating (FCR) rating of "Good" or "Fair." Twenty-one buildings were rated "Poor."

Road Construction, Power Lines, and Other Linear Rights-of-Way

The Forest continues to acquire road rights-of-way based on needs determined through roads analyses. During 2006 and 2007, no road easements were acquired. During 2008, 3 road easements were acquired plus 2 more during 2009. For 2010, 3 cost-share road easements were acquired, but during 2011, no road easements for FS use were acquired. Six road easements were acquired in 2012 and a single easement in 2013. In 2013, the Ouachita NF defended the land title for 2 road easements acquired in prior years where the owner of the servient estate blocked access to a National Forest System road. No permanent road easements were acquired in 2014 or 2016, but 3 road easements were acquired in 2015.

The Forest Plan specified that road construction, power lines, and other rights-of-way that would create linear openings in the Forest are unsuitable in:

MA 1. Wilderness, Poteau Mountain, and MA 1C. Proposed Wilderness Additions
MA 4. Research Natural Areas and National Natural Landmarks
MA 22. Within active Red-cockaded Woodpecker clusters

Those suitability determinations of preserving wilderness values, research natural areas, national natural landmarks, and RCW active clusters is reasonable, as well as not cutting through the Forest by creating linear openings. There are no changes needed to the Forest Plan on these determinations.

In other MAs, these linear features are allowed but must be installed in a manner that is consistent with the management objectives of the area. Linear features are restricted in:

MA 2. Special Interest Areas
MA 9. Water and Riparian Communities
MA 19. Winding Stair Mountain NRA
MA 20. Wild and Scenic River Corridors

While the Forest has, for the most part, adhered to the policy to confine linear uses to existing corridors, there have been exceptions such as the water line constructed to Queen Wilhelmina State Park in the Rich Mountain Recreation Area. The State of Arkansas was not required to confine the water line to existing corridors because of the additional cost to the public in general to construct the project.

The Forest designates 2 multi-facility corridors to maximize co-location of future uses:

- Between Norman and Danville, AR along Arkansas State Highway 27
- Between Broken Bow and Heavener, OK along Oklahoma State Highway 259

Since the 2005 Forest Plan, there have been 3 proposals for major utility construction across the Forest. All of these proposed routes were on paths that avoided crossing NFS lands wherever possible; however alignments were not confined to the corridors as set out in the Forest Plan. Passage of the Energy Policy Act in 2005 placed greater emphasis on facilitating the construction new utility corridors to meet the country's energy needs.

Protection of water resources is of particular importance due to the potential for soil disturbance and production of sediment from the creation of linear rights-of-way. Where road location is necessary, roads and stream crossings should be designed to minimize impacts and to protect the natural and beneficial values of the area.

Special Uses

For additional information, contact Jessica Soroka at jasoroka@fs.fed.us
Information for 2016 was furnished by Elaine Sharp, now retired

There were 538 special authorizations of various types in 2016. Overall, the number of authorizations issued remained constant; however, the number of road use authorizations increased 11% from 2015. Utility and communication corridor uses comprise the next highest categories of use requests. The amount of NFS land occupied by utilities continues to increase, because existing permits are being amended to include additional NFS land for utility service. Permit consolidation accounts for the decrease in the number of utility permits issued between 2015 and 2016.

A measure of success in assuring that uses of NFS land comply with the terms and conditions of the authorizations is the number of permits administered to standard. In 2016, 395, or 73% of the permits were administered to standard, a slight decrease from the 399 administered to standard in 2015.

General Trends:

- The number of road authorizations continues to rise as the backlog of unauthorized occupancies are issued permits.
- Utility permit amendments are increasing as inholders request utility service to their properties.
- Permits issued for research and heritage resource surveys are relatively stable. The number of requests for wildlife research permits increased steadily through 2014 and then declined for 2015 and 2016. The Monitoring Report may not correctly reflect this activity because most research projects have been granted waivers from the permitting requirement.
- Dams/Reservoirs, agricultural uses and community uses remain unchanged from 2015 and increases or decreases are not anticipated.
- Communication uses remained constant since 2014.
- Recreation uses are mostly short-term, recurring events. The amount of use has remained relatively stable.

Special Use Permits by type and use are shown in the following:

Special Use Permits, by Type of Authorization and FY, ONF

Type of Authorization	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Roads	318	317	330	298	278	262	285	280	290	281	292
Water Lines, Electric, Telephone Utilities, & Oil and Gas Pipelines	58	58	58	60	60	57	63	64	75	70	68
Research or Resource Surveys	13	11	12	7	11	12	16	17	16	10	11
Dams and Reservoirs	24	24	24	24	24	24	22	22	22	22	22
Communication Uses*	74	60	72	61	59	49	55	56	62	64	64
Recreation Uses	10	7	11	10	10	11	65	66	69	60	55
Agricultural Uses	--	--	7	4	4	4	6	6	6	6	5
Community Uses	7	7	7	7	7	8	6	6	13	13	13
Misc. Uses	21	15	42	7	10	8	20	12	16	9	8
Total	532	506	563	478	463	435	538	529	569	538	538

***A list of the approved communication sites and those pending approval as of September 2016, is included in Appendix E.**

Emerging Issues - Special Use Permits

Since the Forest Plan was adopted in 2005, there have been 2 policy changes affecting special use permits and the number of permits issued. The first policy change was implementation of Cost Recovery where applicants pay a portion of the cost of processing their permits. The requirement to pay part of the cost of processing a permit has both slowed processing time and dissuaded some proponents from applying for a permit.

Implementation of policy to waive the need for a permit in those cases where the proposed use is nominal and of short duration is the second change. If state or local permits satisfy Forest Service concerns and other terms and conditions are not necessary, the need for a permit may be waived. The Forest has waived the need for most research studies and geocaching site permits (a recreational activity involving use of GPS devices to locate stashes left by other geocachers).

Current economic conditions have resulted in increased requests from public and semi-public entities seeking to utilize National Forest Systems lands for roads, easements, and utilities. With limited public funding and increased pressures for public services, it is likely that such pressures will continue to increase. Acquiring public access through private lands is becoming increasingly difficult, because owners are less willing to allow public access across their land.

Commodity/Commercial Uses

Three types of commodities and commercial uses are managed by the forest:

- Minerals and Energy Development
- Livestock Grazing or Range Activities
- Timber Sale Program including Firewood Permits

Minerals and Energy Development

For additional information, contact Andrew McCormick at andrewtmccormick@fs.fed.us

There is very little Forest discretion within the minerals management program as most leases, licenses, and permits are granted with legal stipulations attached. The Forest Plan objectives that relate to minerals management with specific requirements to process applications follow:

> *OBJ18: Process applications for federal mineral leases, licenses, and permits within 120 days.*
>
> *OBJ19: Process operations proposed under outstanding and reserved mineral rights within 60 days and 90 days, respectively.*

The minerals program manages hardrock mines, as well as operations for sand, gravel and stone; non-energy minerals such as quartz and wavellite; and other energy resources such as coalbed methane and coal. At the end of 2016, there were 19 quartz contracts, 4 quartz leases, 2 wavellite leases, 5 coal-bed methane wells, 1 coal lease-by-application (pending) and 33 common variety mineral materials pits/quarries on the Ouachita National Forest. In addition to the active mineral operations, the Minerals Program, also oversees an abandoned mine program which deals with about 70 abandoned mines across the Ouachita National Forest.

As reported since 2006, financial investment involving natural resources remains low on the Ouachita NF in both Arkansas and Oklahoma. In 2016, the number of gas leases on the Ouachita NF decreased to 198, with 17 gas leases being terminated in Arkansas during the year. Of the mineral operations, 12 of the quartz contracts, 3 of the quartz leases, 1 of the wavellite leases and 25 of the common variety mineral material sites were actively being mined; although some had very minimal production. There were no locatable operations proposed, and no known mining claims were located on the Forest during 2016. Currently, there are no known mining claims on the Ouachita NF. The amount of mineral material removed from the Ouachita NF in 2016 increased from 2015, with approximately 19,200 tons of mineral materials being removed from the Ouachita NF. Interest in nominating new gas leases has gone down significantly in the last couple of years; while the number of gas leases was increasing several years ago. In 2011, the Bureau of Land Management retracted all of the gas lease consents from Arkansas; however, this was rescinded in 2014.

During the period 2011 to 2016, the BLM issued no new leases on the Ouachita NF, and no new gas leases were nominated in 2016. One new quartz contract was nominated in September 2016 for the first time since 2008. Interest in quartz mining remains high, and several proposed expansions of current operations were proposed near the end of 2015 and during 2016. Two mine expansions and 2 Plans of Operations were approved on existing quartz leases. During 2016, 6 quartz mines allowed rock hounding for the general public on Federal Lands resulting in about 10,000 people visiting the Forest to search for quartz crystals in 2016. An application for a coal lease was submitted, and interest is continuing for the proposal, though it has not moved forward this year.

Gas Leases and Mineral Cases by FY, ONF

	Gas Leases	Minerals Cases						
		Salable Operations Managed	Locatable Operations Managed	Non-Energy Leasable Operations Managed	Energy Leasable Operations Managed	Reserved/ Outstanding Mineral Operations Managed	Geological Hazards and Resources Managed	Totals
2006	403	--	--	--	--	--	--	--
2007	565	--	--	--	--	--	--	75
2008	827	--	--	--	--	--	--	67
2009	837	--	--	--	--	--	--	57
2010	800	--	--	--	--	--	--	39
2011	0*	--	--	--	--	--	--	0
2012	215	--	--	--	--	--	--	20
2013	215	--	--	--	--	--	--	20
2014	215	98	0	32	11	0	26	167
2015	215	115	2	35	5	0	24	181
2016	198	97	0	33	138	0	32	300

This tabular format represents a change from previous year's reporting and includes additional information not previously reported.

*Bureau of Land Management retracted all of the gas lease consents from Arkansas, and no new ones were auctioned in 2011

Livestock Grazing/Range Activities

For additional information, contact Susan Hooks at shooks@fs.fed.us

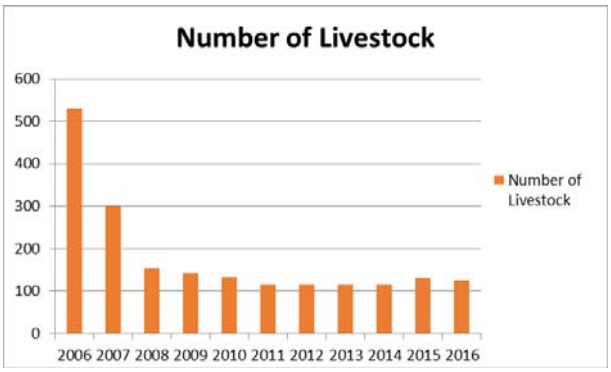
Desired Condition: *Livestock grazing opportunities are maintained consistent with other resource values in designated livestock grazing areas (allotments).*

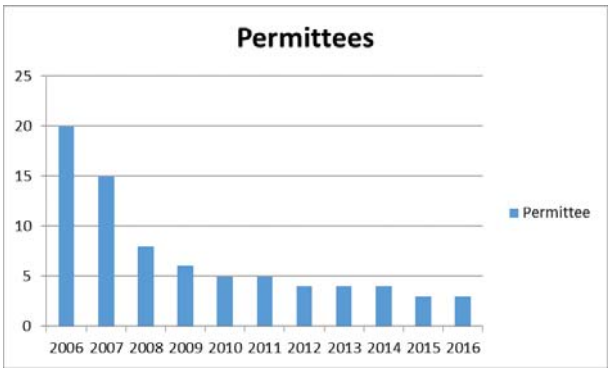
The current condition of the range allotments are in line with the desired condition and plan objectives. Overall, the interest in grazing on the Ouachita NF has declined since 2005 and is not expected to increase in the future. All grazing on the National Forest is in forest and/or woodlands.

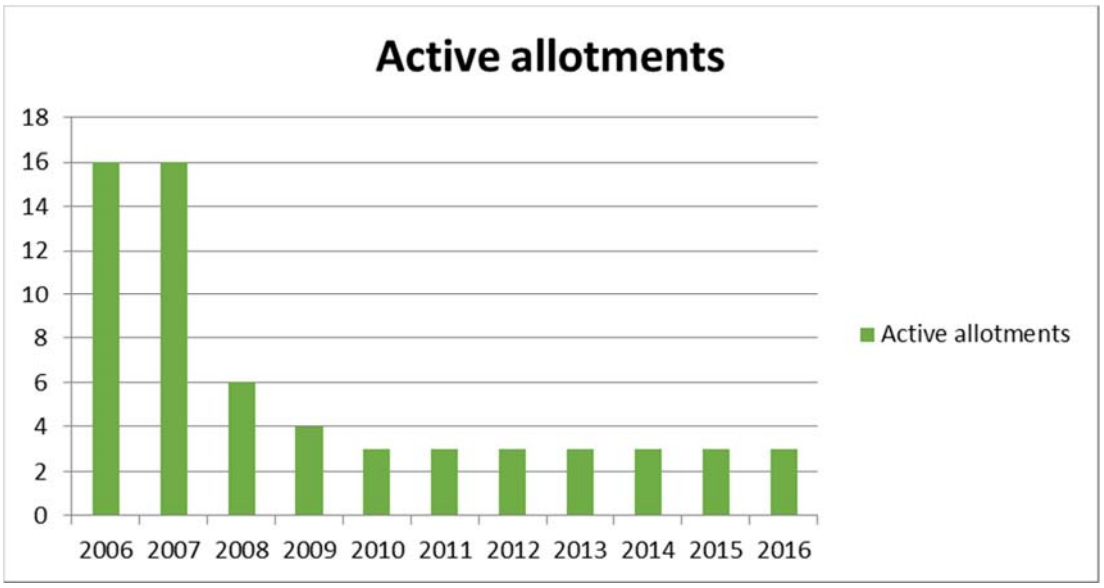
Number of cattle being grazed has been relatively stable since 2010, and resource damage from grazing is minimal. There were 500 acres of rangeland vegetation improvements in grazing season 2016.

Number of Livestock, Permittees, and Active Allotments by FY, ONF

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of Livestock	715	530	300	154	142	133	116	116	116	116	130	124
Permittees	24	20	15	8	6	5	5	4	4	4	3	3
Active Allotments	16	16	16	6	4	3	3	3	3	3	3	3







Trends revealed through monitoring: The range program had been in decline through 2016 but has been relatively stable for the past 9 years after a large drop between 2007 and 2008. Permittees have declined slightly, but active allotments have been relatively stable since 2009. Use is consistent with the 3 standards found at 9.08 - 9.09 that require grazing and watering sources to be carried out in a way that is not damaging to the Streamside Management Area as well as 9.10 that allows grazing within limits of usable forage and protects water quality.

The current condition of the range allotments are in line with the desired conditions and plan standards. Likewise current management appears to be adequate to protect Ouachita NF

resources without adjusting suitability determinations made in the 2005 Forest Plan (shown in the following tabulation).

Management Area	Livestock Grazing Suitability
1. Wilderness, 1.B. Poteau Mountain, & 1.C. Proposed Wilderness Additions 3. Developed Recreation Areas 4. Research Natural Areas & National Natural Landmarks 7. Ouachita Seed Orchard	Unsuitable
2. Special Interest Areas 5. Experimental Forests 6. Rare Upland Communities 14. Ouachita Mountains, Habitat Diversity Emphasis 15. W. Gulf Coastal Plain, Habitat Diversity Emphasis 17. Semi-Primitive Areas	Suitable with Forest-wide Restrictions
8. Administrative Sites/ Special Uses	Portions both Suitable & Unsuitable with Forest-wide Restrictions
9. Water/Riparian Communities 16. Lands Surrounding Lake Ouachita & Broken Bow Lake 19. Winding Stair Mountain NRA (and associated non- Wilderness designations) 20. Wild and Scenic River Corridors 21. Old Growth Restoration 22. Renewal of the Shortleaf Pine/ Bluestem Grass Ecosystem and RCW Habitat	Suitable with Forest-wide Restrictions as well as Management Area Restrictions

Timber Sale Program

For additional information, contact Ray Yelverton at ryelverton@fs.fed.us

Firewood

Demand for firewood remains high and stable with no discernable trends. The Forest Plan contains two design criteria or standards specifically for firewood:

FW001: Hardwood will be made available for firewood as identified through project level analysis.

FW002: In areas where trees have been treated with herbicide, use of treated trees for firewood will not be allowed.

With the implementation of the travel management rule establishing designated routes, there is a need to note access routes on firewood permits.

Volumes of firewood remained fairly steady during the first 4 years of plan implementation, but have fluctuated greatly in the period 2010 – 2016. The cords of firewood sold are shown in the following tabulation.

Cords of Firewood Sold (Cords = CCF x 1.54)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cords Sold	1,364	1,299	1,686	1,650	2,107	1,609	1,145	936	828	1,242	715

Source: Timber Cut and Sold Report as reported at the end of the fiscal year.

Allowable Sale Quantity (ASQ)

A priority of the timber sale program is to contribute to the economic base of local communities by providing a sustained yield of high-quality wood products at a level consistent with sound economic principles, local market demands, and desired ecological conditions. To this end, the Ouachita NF has sold an average of 63.29 percent of ASQ over the last 11 years, as shown in the following tabulation. The ASQ for the Ouachita NF is 27 million cubic feet per year (270,000 CCF). Timber removed from lands unsuitable for timber production and volume harvested by salvage (non-chargeable volume) are excluded when calculating timber volumes chargeable to the allowable sale quantity.

Chargeable (CV) and Non-Chargeable (Non-CV) Volume Sold (CCF) by FY, ONF

Year	Green		Salvage		Total	
	CV	Non-CV	CV	Non-CV	CV	Non-CV
2006	193,672	0	3,447	0	197,119	0
2007	204,311	0	1,995	0	206,306	0
2008	189,276	4,983	7,545	54	196,821	5,037
2009	162,929	0	12,459	0	175,388	0
2010	182,438	76	6,375	394	188,813	470
2011	167,190	6,747	26,116	0	193,306	6,747
2012	174,797	75	3554	0	178,351	75
2013	139,198	908	12,160	1,477	151,358	2,385
2014	154,396	629	14,247	0	168,643	629
2015	173,228	164	7,647	0	180,875	164
2016	171,268	589	3,858	0	175,126	589
Total	1,912,703	14,171	99,403	1,925	2,012,106	18,096
Annual Average	173,882	1,288	9,037	175	182,919	1,463
Average Total	175,170		9,212		184,382	

Source: CDW – PTSAR - Reports PTSR201F & PTSR202F

Restore Native Shortleaf Pine and Hardwoods

Forest Plan Objective 11 is as follows: ***"****Apply management practices to begin replacing off-site loblolly pine plantations with shortleaf pine and native hardwoods where such plantations were installed outside the natural range of loblolly pine (i.e., most of the Ouachita Mountains); treat at least 500 acres per year."* Based on acres clearcut of off-site loblolly pine, the Ouachita NF is only converting an average of 99 acres per year, compared to the objective of 500 acres per year. Constraints may be age and acreage/spacing limitations. The tabulation below displays acres of off-site loblolly pine sold by fiscal year.

Acres of Off-Site Loblolly Pine Plantations Sold by the Clearcut Method for Conversion to Shortleaf Pine and Native Hardwoods, 2006 – 2016, ONF

	Acres Sold by Clearcut
2006	74
2007	0
2008	193
2009	0
2010	152
2011	39
2012	29
2013	253
2014	46
2015	0
2016	302

Source: TIM

Timber Volume Offered and Sold

Forest Plan Objective 41 is as follows: *"Sell an average of at least 200,000 hundred cubic feet (CCF) of timber per year."* Since 2006, the Ouachita NF has sold an average of almost 92% of the objective of 200,000 CCF. The objective of at least 200,000 CCF per year was exceeded in 2007, 2008, and 2011. The timber volumes offered and sold by year are shown in the following table:

Timber Volume Offered & Sold (CCF) Compared to Net Budget Allocation for All Timber ($ by FY), ONF

	Volume Offered	Volume Sold	Timber Budget ($)	$/CCF Offered	$/CCF Sold
2006	75,699	197,119	6,722,677	88.81	34.10
2007	198,606	206,306	7,182,961	36.17	34.82
2008	215,206	201,858	7,216,888	33.53	35.75
2009	161,741	175,388	7,093,596	43.86	40.45
2010	204,688	189,283	7,960,905	38.89	42.06
2011	198,790	200,053	8,439,629	42.45	42.19
2012	161,287	178,426	7,966,274	49.39	44.65
2013	181,873	153,743	6,135,978	33.74	39.91
2014	133,428	169,272	7,051,133	52.85	41.66
2015	207,345	181,039	6,458,528	31.15	35.67
2016	214,444	175,715	7,949,355	37.07	45.24

Annual Averages,* (2006-2016) Timber Offered and Sold/CCF, ONF

Volume Offered	Volume Sold	Timber Budget ($)	$/CCF Offered	$/CCF Sold
177,555	184,382	7,288,902	41.05	39.53

***During 2006, the Ouachita NF reverted to Sold Volume as the Target vs. Volume Offered. Volume Offered in 2005 but not sold until 2006 was credited towards the Sold Target in 2006 and the offered target in 2005. If 2006 is not considered, the average $/CCF Sold for 2007 through 2016 is $40.12.**

Improve Utilization of Hardwood Products

A stated priority of the Forest Plan is, *"Develop local economy marketing opportunities to improve utilization of hardwood products."* There are limited opportunities for the Ouachita NF to develop local economy marketing opportunities which would improve utilization of hardwood products. One district cluster, the Mena/Oden unit, has consistently offered hardwood in their timber sales. Over the past 2 years other Ranger Districts have begun to offer hardwood saw timber and/or hardwood pulpwood in their sales. Depending upon the ratio of pine to hardwood in a sale, bids are being received on sales with hardwood products included. The volume of hardwood sold by product is shown in the tabulation below.

Hardwood Sawtimber and Pulpwood Volume
Sold (CCF) – Excluding Firewood, 2006 –2016, ONF

	Hardwood Sawtimber	Hardwood Pulp	Total Hardwood
2006	1,918	2,775	4,693
2007	945	1,485	2,430
2008	2,992	10,712	13,704
2009	623	2,005	2,628
2010	1,803	5,492	7,295
2011	1026	3531	4557
2012	1,459	5,913	7,372
2013	767	4,970	5,737
2014	1,290	6,232	7,522
2015	3,213	8,027	11,240
2016	2,164	12,515	17,679

Source: Timber Cut and Sold Reports

Based on the Range of Annual Proposed/Probable Acres by Method of Cut in the Forest Plan - the Ouachita NF is selling:

- 44 percent of the proposed acres of Regeneration by the Shelterwood/Seedtree Methods
- 10 percent of the proposed acres of Uneven-aged Management by the Single-tree and Group Selection Methods
- 54 percent of the proposed acres of Commercial Thinning

	Actual Acres Sold Compared to Proposed and Probable Activities												
Activity By Acres or Acres Sold	Range of Proposed / Probable Annual Activity	Actual Annual Activity											
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	*Annual Average
Regeneration harvest (by modified seedtree/ shelterwood methods)	5,000-6,000	2,658	4,363	3,186	1,848	2,270	1,837	2,322	1,151	1,503	1,982	845	2,179
MA 14	4,000-4,700	1,374	3,981	2,968	1,685	2,033	1,274	2,195	745	1,225	1,789	791	1,824
MA 15	140	0	0	179	0	0	0	0	179	0	0	0	33
MA 16	--	401	97	39	0	21	33	0	0	141	0	9	67
MA 17	250	52	0	0	78	0	297	87	83	0	0	0	54
MA 21	160	232	0	0	0	0	0	0	0	0	0	0	21
MA 22	1,000-1,200	599	285	0	85	216	233	40	144	137	193	45	180
Other MAs	250	0	0	0	0	0	0	0	0	0	0	0	0
Uneven-aged management	9,000-12,500	3,216	3,065	1,246	1,291	715	444	0	0	0	0	0	907
MA 14	7,200-7,850	1,307	1,972	1,031	508	378	0	0	0	0	0	0	472
MA 16	1,000-1,300	1,841	676	114	0	0	375	0	0	0	0	0	273
MA 17	--	19	0	0	636	0	0	0	0	0	0	0	60
MA 19	800-850	0	417	101	147	337	0	0	0	0	0	0	91
Other MAs	--	49	0	0	0	0	69	0	0	0	0	0	11
Commercial Thinning	20,000-28,500	13,060	9,922	10,981	12,407	10,864	10,978	10,517	8,058	10,316	9,515	11,713	10,757
MA 14	10,000-13,700	5,946	7,368	9,070	7,722	5,700	5,512	6,190	3,512	4,782	5,297	5,384	6,044
MA 15	1,000	0	0	288	0	0	0	0	288	0	177	162	83
MA 16	--	845	608	0	0	764	1,493	0	175	839	805	810	577
MA 17	400-500	60	0	67	415	0	1,462	160	299	0	190	0	241
MA 21	1,500-1,600	493	0	615	1,099	1,000	0	272	145	460	0	1,463	504
MA 22	7,000-8,200	5,571	1,946	534	3,171	2,294	1,780	3,895	3,639	4,235	3,046	3,783	3,081
Other MAs	--	145	407	0	0	1,106	731	0	0	0	0	111	227

Source for Actual Acres: TIM

Forest Products Emerging Issue - Biomass

The Forest has modified some contracts to utilize trees smaller than typical utilization standards. Consideration should be given to the following:

- Address utilization of biomass in NEPA documents. Currently some documents specifically state that "no whole tree harvest" will be done, which may preclude biomass utilization
- The Ouachita NF should address where biomass may be utilized especially related to soil productivity

It is recommended that biofuels be addressed with specific guidelines, quantified, incorporated within the SW Guidelines, and addressed with accountability measures such as the following: "Biofuels: Woody vegetation on the forest floor is often seen only or primarily within the context of fuel for fire. However, the ecological value of such material is immense. There is a concern that when woody debris is removed for economic reasons, the effects on soil health could be overlooked or, at the very least, underestimated. While some removal of fuels is ecologically acceptable, their presence in adequate amounts is critical for soil protection and productivity, wildlife population, biodiversity, water quality and quantity, carbon storage, and as a nutrient pool which can be activated through the prescribed fire process. In addition, where debris removal doesn't coincide with other ongoing field operations, there will be opportunity for additional ground disturbance activities which can potentially increase soil compaction and erosion."

Forest Regeneration

For additional information, contact Steve Cole at sncole@fs.fed.us

The Ouachita NF predominately uses natural regeneration to propagate stands of mature timber and provide early seral stage vegetation. Regeneration by seedtree and shelterwood cuts in Shortleaf pine/Shortleaf pine-Oak planned and contracted through commercial timber sales during the period 2006 - 2016 resulted in 20,272 acres of regeneration. Natural even aged regeneration systems are very successful with less than 10 percent of the area in need of supplemental planting. Additionally, uneven age harvests occurred on 11,142 acres resulting in approximately one-seventh of those acres (1,592 acres) in regeneration.

Artificial regeneration occurs on the Forest in cases of storm damage, fire, and insect or disease damage. Artificial regeneration also occurs where off-site species (loblolly pine) are removed through clearcut to restore shortleaf pine and on cut-over acquired lands., There were 11,729 acres planted in primarily shortleaf pine with some loblolly pine (within the native range) planted on the OK district during the 11-year review period.

Acres Planted, FY 2006 – FY 2016, ONF

Fiscal Year	Acres Planted
2006	913
2007	397
2008	1,504
2009	1,495
2010	1,317
2011	1,178

Fiscal Year	Acres Planted
2012	340
2013	1,787
2014	853
2015	1,271
2016	674

The Ouachita NF has had moderate-to-good success in planting shortleaf pine in the past. The Forest has used containerized seedlings grown by contract nurseries using seed from the Ouachita Seed Orchard. An increase in initial survival is one result of using the containerized seedlings. As can be seen in the following pictures, increased growth rates and potentially eliminating release treatments have also occurred.

To Right:
Seedlings planted January 2005 on Caddo Ranger District acquired lands.

Source: USFS, November 2010

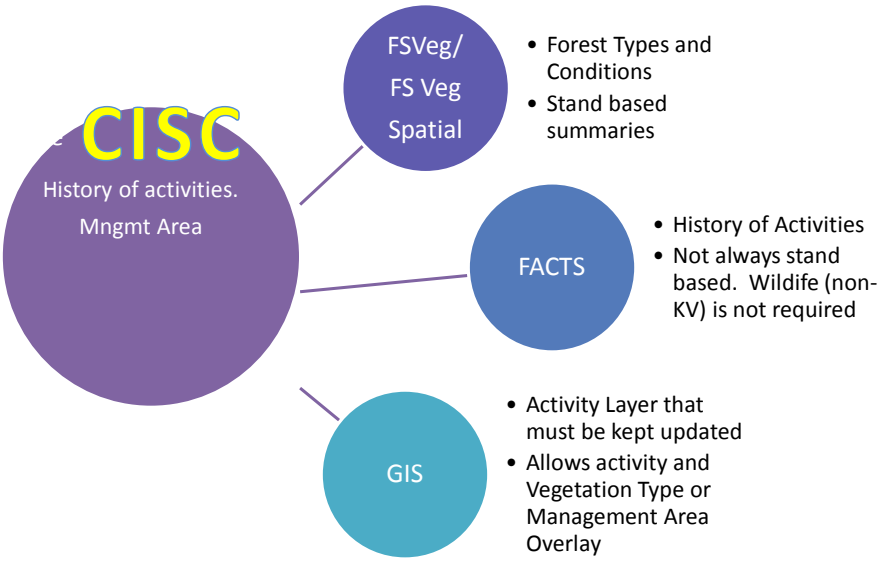
Containerized seedling on left. Natural regeneration on right. Containerized seedlings planted in 2007, Mena Ranger District.

Source: USFS, April 2010

Restoration of pine-grass old growth forests and woodlands fills a missing component (an ecological gap) among existing communities of the Ouachita Mountains, created mainly by decades of fire suppression and large-scale logging in the 1920s and 1930s. Pine-grass old growth systems provide habitat for a wide range of wildlife, including both late seral stage species and some open area associates. Portions of this area (replacement stands) are suitable for timber production under long rotations.

The historic database, Forest Continuous Inventory of Stands (CISC), included forest conditions and activities based on stands. The Forest now has databases for that information, but in order to get the same information included in CISC, a GIS layer of activities is required. Coordination with GIS is improving and better data are being populated in the activities layer since 2010.

Evolving Data



Forest Regeneration Trends

Silvicultural treatments involving commercial timber sales are less than half of what was proposed and probable in the Forest Plan. Under current workloads, sale preparation requirements and workforce, it is unlikely that this trend will be altered. This trend affects the priorities and objectives of the plan including: OBJ06, OBJ08, OBJ09, OBJ10 and OBJ11.

- 0-60 Year Age Class = 28 percent
- 60+ Age Class = 72 percent
- 1 percent Early Seral added (5 Yrs) thru Harvest Cuts

Acres Harvested by Method of Cut, FY 2006 – FY 2016, ONF

Harvest Type by Year	Clearcut	Even-Aged Management (Seedtree/ Shelterwood)	Uneven-Aged Management (Group/ Single Tree)	Commercial Thinning/ Improvement	Sanitation
2006	0	3,283	3,699	8,340	1,383
2007	0	1,524	1,756	7,094	150
2008	50	2,733	819	7,840	312
2009	96	2,396	1,547	9,364	2,241
2010	32	2,394	1,491	8,478	699
2011	0	1,182	700	6,245	432
2012	39	2,304	217	7,921	1,694
2013	36	1,198	882	7,188/97	224
2014	75	1,575	0	4,710/309	2,258
2015	117	737	0	4,779	1,036
2016	162	946	31	7,081	409
Totals	607	20,272	11,142	79,446	10,838
Average	55	1,843	1,013	7,222	985

Source: FACTS Database

Note: In this 2016/10-Year Review all reported numbers have been reviewed and adjusted to mirror accomplishments as reported in FACTS, and a new column of information has been added to reflect sanitation (removal of trees for the purpose of removing insects or diseases from a stand).

Available stumpage for Knutson-Vandenberg (KV) drops sharply when specified road construction or reconstruction is required. The KV Act of 1930, as amended, established a funding mechanism for wildlife and fisheries, timber, soil, air, and watershed restoration and enhancement projects. Projects are restricted to timber sale areas and are funded from receipts generated from those timber sales on those areas. The Forest is experiencing a downward trend in KV dollars available for wildlife, fisheries, invasive species, and erosion control projects due to increased road reconstruction costs.

Air Quality

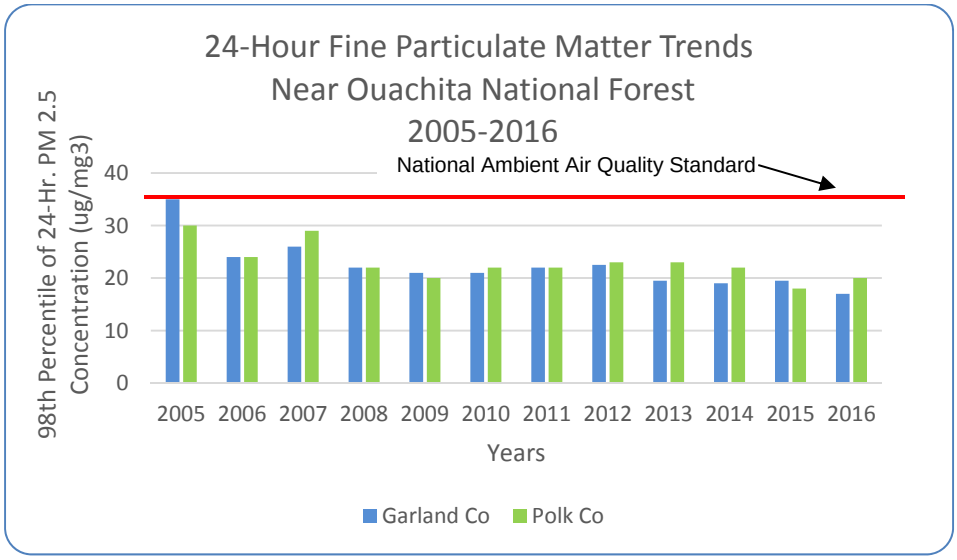
For additional information, contact Judith Logan at jlogan@fs.fed.us

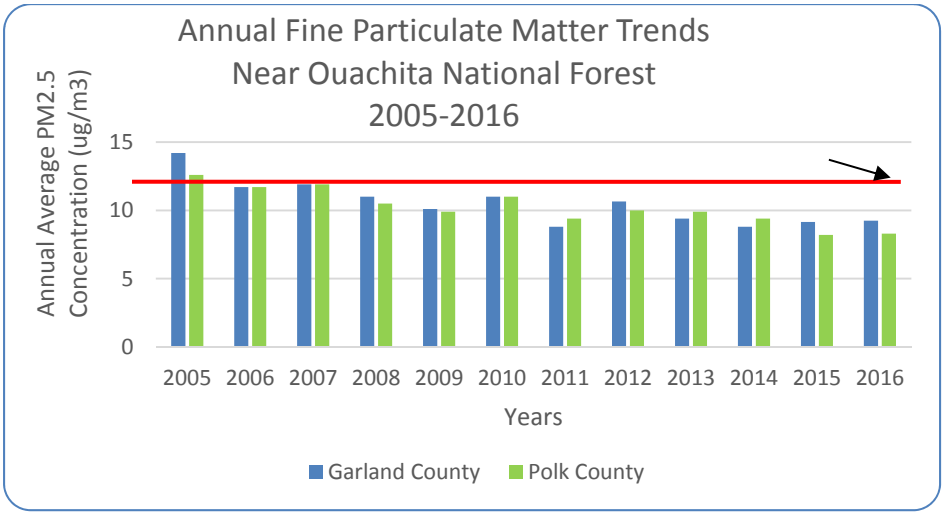
Monitoring of the AQRV for the Class I Area [Caney Creek]

Objective 16 of the 2005 Forest Plan states, "Protect and improve the Air Quality Related Values (AQRV) of the Class I Area." The Air Quality Related Values (AQRVs) for Caney Creek Wilderness are flora, visibility, and water. In order to evaluate whether impacts may be occurring to the AQRVs, fine particulate matter as well as ambient ozone concentrations and visibility are monitored near the Class I area. Additionally, monitoring of acidic deposition levels occurs nearby and is representative of conditions on the Forest. All data are for calendar years.

Particulate Matter

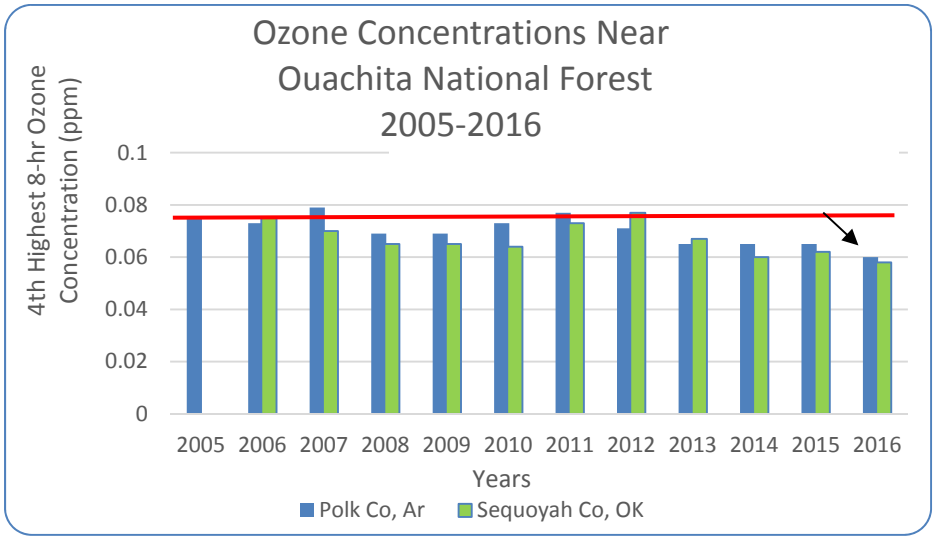
Particulate matter is a mixture of extremely small (fine) particles made up of soil, dust, organic chemicals, metals, and sulfate and nitrate acids. The size of the particles is directly linked to health effects, with smaller particles causing the worst impacts to human health. As a result, the Environmental Protection Agency (EPA) has set a primary National Ambient Air Quality Standard (NAAQS) for ultra-small (less than 2.5 microns in diameter) particulate matter on both a short-term (24-hour) and annual basis. The 24-hour fine particulate matter ($PM_{2.5}$) NAAQS is currently set at 35 µg/m^3, while the annual $PM_{2.5}$ NAAQS is 12 µg/m^3. The EPA may set more stringent standards in the future if scientific research suggests that the current standards are not protective enough of sensitive populations. The following graphic shows the measured $PM_{2.5}$ levels at the 3 fine particulate matter monitoring sites located near the Ouachita NF. All concentrations levels are below the 24-hour and annual air quality standards. The averages for the past 3 years are also presented.





Ozone

Ozone is a pollutant formed by emissions of nitrogen oxides and volatile organic compounds in the presence of sunlight. At elevated concentrations, it causes human health concerns as well as negative impacts to vegetation. The EPA, as directed by Congress, has set a national ambient air quality standard (NAAQS) of 0.075 parts per million (ppm) to protect both human health and the environment. However, EPA is required to reassess the standards every 5 years based on most recent scientific research, and as a result, more stringent standards may be proposed in the future. The following graphic depicts the measured concentrations of ozone at the 2 monitoring sites closest to the Forest. As shown, most values are below the NAAQS. The Polk County ozone monitor reached 0.077 ppm in 2011 and the Sequoyah County monitor also averaged 0.077 ppm in 2012. The Sequoyah monitor was not in operation in 2005. Since then, in each of the following years, both monitors have recorded values below the NAAQS.

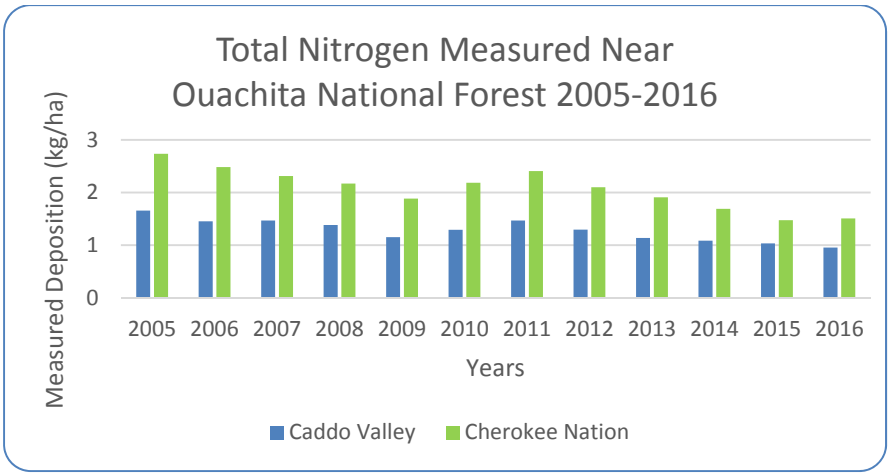


Acidic Deposition

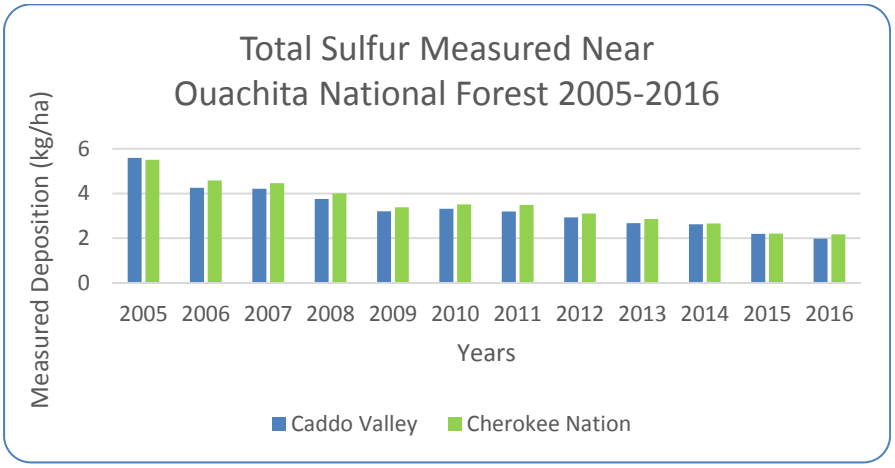
Deposition of acidic compounds onto the Forest can cause harmful effects to both aquatic and terrestrial ecosystems. Such deposition can occur in 3 forms: dry, wet, and cloud. Dry deposition is the direct fallout of fine particulates and gases from the atmosphere. Wet deposition occurs when acidic pollutants combine with water in the atmosphere, which is then deposited in the form of rain, snow or hail. Both sulfur and nitrogen deposition can impact the water quality on the Forest by decreasing the acid neutralizing capacity (ANC) and decreasing the pH in perennial streams.

The National Atmospheric Deposition Program (NADP; http://nadp.sws.uiuc.edu) and Clean Air Status and Trends Network (CASTNET; https://www.epa.gov/castnet) operate 2 sites near the Ouachita NF. Neither of these locations is on the Forest, but the data collected represent a range of sites and are generally representative of conditions occurring on the Forest. Because small fluctuations do occur from year to year, trends over longer periods of time are more reliable.

From 2006 through 2016, nitrogen and sulfur deposition rates indicate a steady decrease for the most part in acidic deposition, although, in 2011, both nitrogen rates increased sharply for the year. By 2012, both deposition rates decreased over 30%. The following graphs show the total sulfur and total nitrogen deposition trends for Caddo Valley (Clark County, AR) and the Cherokee Nation (Adair County, OK) monitoring locations as reported in the CASTNET database.



Source: CASTNET



Source: CASTNET

Air Quality Monitoring Findings/Trends

As shown above, fine particulate matter and ozone concentrations near the Ouachita NF have been measured for several years. Although the air quality trends appear to be improving, at this time, the trends are not statistically significant.

IMPROVE Monitoring Network

Except for 2007, the IMPROVE monitoring site has had at least 90 percent data capture for all recent years. **(Source: http://vista.cira.colostate.edu/views/)**

Air Quality Ongoing Issue: Smoke from Prescribed Fires on the Forest

The use of prescribed fire emits $PM_{2.5}$, along with other pollutants. It is important for National Forest managers to be aware of downwind concentrations of fine particulate matter to ensure that prescribed fire emissions are not contributing to any violations of the NAAQS. As noted previously, there are 3 $PM_{2.5}$ monitors near the Ouachita National Forest. The concentrations of measured fine particulate matter near the Ouachita National Forest, both on a 24-hour average and an annual basis, are less than the NAAQS of 35 and 15 $\mu g/m^3$, respectively. Thus, while prescribed fire is contributing to nearby concentrations of $PM_{2.5}$, the area is still meeting the NAAQS for this pollutant.

Terrestrial Ecosystems

Desired conditions for each terrestrial ecosystem type are described on pages 6 – 18 of the Forest Plan. Many elements of terrestrial ecosystems, including soils, fire influences and fuels, forest regeneration, non-native invasive species, insects and disease, and vegetation management for regeneration are presented in subsequent sections.

Vegetation Management

Management Area 14, Ouachita Mountains-Habitat Diversity Emphasis, consists of approximately 740,583 acres, and Management Area 15, West Gulf Coastal Plain-Habitat Diversity Emphasis, consists of approximately 13,066 acres; and both were established within the Forest Plan for varied intensities of vegetation management. Management Area 14 consists of extensive blocks of upland (non-riparian) forest located throughout the Ouachita Mountains. The primary community types, each of which also occurs in other MAs, are Ouachita Pine-Oak Forest; Ouachita Pine-Oak Woodland; and Ouachita Dry-Mesic Oak Forest. The Ouachita Mountains-Habitat Diversity Emphasis MA includes all National Forest System lands in the Ouachita Mountains not assigned to special areas. Management Area 15 consists of lands in the West Gulf Coastal Plain of southeastern Oklahoma that are available for varied intensities of timber, wildlife, fisheries, range management and roaded-natural recreational opportunities. The primary community type represented within MA 15 is West Gulf Coastal Plain Pine-Hardwood Forest. Vegetation Management in these 2 MAs average 8,340 acres annually. Both MA 21 and 22 also receive active vegetation management.

National Forests Restoration

For additional information, contact Steve Cole at sncole@fs.fed.us

Restoration of our national forests benefits the environment and creates jobs in rural communities. Increasing the pace of restoration of the Nation's forests is critically needed to address a variety of threats – including fire, climate change, insect infestations, and non-native invasive species -- to the health of our forest ecosystems, watersheds, and forest-dependent communities. The need for restoration is an issue that crosses all ownerships; and the National Forests in Arkansas and Oklahoma are working with partners in an all-lands approach.

Across the Ouachita, a number of restoration projects are ongoing. Some of the largest and highest profile projects are the Collaborative Forest Landscape Restoration Program, and the Joint Chief's Initiative.

Collaborative Forest Landscape Restoration Program (CFLRP)

For additional information, contact Steve Cole at sncole@fs.fed.us

The Collaborative Forest Landscape Restoration program is a program created by Congress under the *2009 Omnibus Public Land Management Act* to foster collaborative, science-based restoration in National Forests. It is unique in that it simultaneously promotes the following:

- job stability in rural communities
- a reliable wood supply
- restored forest health
- improved safety
- reduced fire suppression costs

Two separate Collaborative Forest Landscape Restoration Program projects are in the sixth year of an overall 8-year project life, and contribute cumulatively toward preparation of timber sales and restoration of woodland landscapes.

Prescribed fire helps to meet important restoration goals.

In 2011, the Ouachita NF applied for and subsequently (2012) received an 8-year grant award for the Shortleaf-Bluestem Community designed to accelerate the restoration of shortleaf pine – bluestem grass forest communities on the Forest on over 350,000 acres. The grant is funded directly for approximately $2.4 million a year, and includes major funding for methods including commercial thinning (~$500,000), non-commercial thinning (primarily midstory reduction treatments but also including pre-commercial thinning and release for about $500,000) and prescribed burning for $1.4 million to both restore and maintain the pine – bluestem communities.

From the beginning of the project about 170,000 acres of restoration has occurred, and the Forest is on-pace for all elements with the exception that purchasers have not bid all sales and the fuels reduction component of is well below where the Forest needs to be to achieve its restoration goals.

Monitoring:

- Vegetative – 100 plots, 50 in AR, 50 in OK; done under agreement with TNC
- Wild Turkey – 3 years of field data, partners include ASU, AGFC, and NWTF; complete presentation at May 24-25 Coop Meeting
- Soft Mast – partners included SRS and SFA University; results pending final thesis
- Economic Impact Study – through UAM; final results available
- Bird Points – partner is NE Research Station, contributes monitoring results to overall program
- Environmental education (Native Expeditions) has contributed toward the planting of milkweed, video productions, and "Welcome to the Woods" events as well as tours. During the 2015/2016 school year (FY2015) 3,500 students and 98 teachers benefitted from indoor/outdoor hands-on demonstrations that offer national education curriculum standards for the classroom incorporating curriculum from:
    - PLT (Project Learning Tree) http://www.plt.org
    - Project WET (Worldwide Water Education) http://www.projectwet.org
    - Project WILD http://www.projectwild.org
    - Leave No Trace http://www.lnt.org
- Zambian and Columbian officials have toured the restoration areas during the past couple years.

The following shows overall matching amounts and direct CFLR funding associated with the CFLRP Project since its inception in 2012.

CFLR direct funding and Matching Amounts

Year	Direct CFLR Funding ($)	Matching Contribution ($)
2012	316,319	720,474
2013	2,099,632	2,600,223
2014	2,112,377	2,143,051
2015	2,322,994	1,944,928
2016	2,257,474	1,981,776
Totals	**9,108,796**	**9,390,452**

Accomplishments associated with key treatments for Pine-Bluestem restoration for the Ouachita NF are presented in the following.

Key Treatments for Pine-Bluestem Restoration	**Acres Accomplished, FY**					**Cumulative Total Acres**
	2012	**2013**	**2014**	**2015**	**2016**	
Prescribed Burning	44,805	54,461	43,532	19,441	70,965	233,204
Non-commercial thinning (WSI, TSI)	3,660	7,021	5,416	4,947	No Report	21,044
Volume of timber sales sold (CCF)	69,206	71,700	79,828	55,237	56,153	332,124
Timber harvest acres:						
Accomplished (sold)	4,966	4,673	7,033	3,925	67,938	156,473
Completed (closed sales)	160	2,465	4,195	3,137		

Data for 2013-2015 is being analyzed to predict abundance of focal species in relation to key habitat parameters such as tree density, pine basal area, and fire history. This work was primarily conducted by Frank R. Thompson, USDA Forest Service Northern Research Station and Melissa Roach, Department of Fisheries and Wildlife Sciences, University of Missouri-Columbia. The number of bird detections by species on 101 or 96 point count surveys in the cooperative forest landscape restoration project on the Ozark-Ouachita Interior Highlands in 2013, 2014, and 2015 is presented below.

Abundance of CFLR Focal Species

Species	Number of Detections		
	2013	2014	2015
Acadian Flycatcher	1	5	0
Bachman's Sparrow	2	1	1
Black-and-White Warbler	3	8	8
Brown-headed Nuthatch	17	4	5
Eastern Towhee	5	10	10
Eastern Wood-Pewee	23	29	21
Kentucky Warbler	10	21	17
Northern Bobwhite (Quail)	2	11	12
Ovenbird	6	7	7
Pine Warbler	121	185	153
Prairie Warbler	48	40	32
Red-cockaded Woodpecker	0	1	0
Red-headed Woodpecker	6	4	2
Summer Tanager	78	70	111
White-eyed Vireo	21	13	13
Worm-eating Warbler	7	3	5
Wood Thrush	0	1	0
Yellow-breasted Chat	52	82	54

Joint Chiefs' Landscape Restoration Partnership

For additional information, contact Steve Cole at sncole@fs.fed.us

An initiative, formed in 2014 between the US Forest Service (USFS) and the Natural Resources Conservation Service (NRCS) to improve the health and resiliency of forest ecosystems specifically targets needed management in areas where public and private lands meet. The partnership, which extends for several years, has the following objectives:

- restore landscapes regardless of land ownership,
- reduce wildfire threats to communities and landowners,
- protect water quality and supply, and
- improve habitat for at-risk species

The **Western Arkansas Woodland Restoration Project (WAWRP)** is a 3-year restoration project focused on glade and woodland restoration as well as soil and water improvements. Approximately $8.5 million was spent from Joint Chief's Landscape Restoration Partnership funding as well as $1.5 million in funding from other sources within and outside the Forest Service and the Natural Resources Conservation Service. Approximately $4.5 million was spent on National Forest System lands and $5.5 million on private lands through NRCS (funds available to landowners adjacent to National Forest System lands to improve and restore glade and woodland habitat on their property).

The initiative is a part of a Climate Action Plan to responsibly cut carbon pollution, slow the effects of climate change and put America on track to a cleaner environment. To accomplish this, USFS and NRCS are launching a coordinated effort on priority forested watersheds to deliver on-the-ground accomplishments by leveraging technical and financial resources, and coordinating activities on adjacent public and private lands. The Ouachita National Forest in collaboration with the Ozark-St. Francis National Forests has initiated one large project under the Joint Chief's Initiative. During 2015, meetings to discuss collaboration opportunities were held with Arkansas and Oklahoma State Foresters. A joint proposal called the "Arkansas, Western Arkansas Woodland Restoration Project" (WAWRP) 2016 – 2018 was submitted in the fall of 2015 for a 3-year grant under the Chiefs' Joint Landscape Restoration Partnership. The WAWRP joint venture is a partnership between the USDS, NRCS, and the Arkansas Forestry Commission (AFC) to promote good land management.

The ONF received funding in 2015 of $800,000 which was paired with $2,180,000 from the Natural Resources Conservation Service. One completed sediment reduction project on the South Fork of the Ouachita River on Road 903 provided fish passage and a substantial reduction of sedimentation into a watercourse leading directly into the water supply reservoir for the cities of Mt. Ida, Pencil Bluff, and Oden, AR. Improvements to water quality and increases to water quantity will help protect the 464 active public water sources in the project area. No additional funding has been received under this authority.

The measures of success for this project will be woodland ecosystems restoration, reduction of fuel load and risk of catastrophic wildfire, enhanced wildlife habitat and help for endangered species, and employment opportunities created in chronically impoverished counties. Benefits will also include reduced risk of catastrophic wildfire, improved water quality (especially in watersheds with drinking water supply), and recovery of at risk wildlife and plant species with an estimated 700 new conservation practices implemented on approximately 22,000 acres. Complementary habitat and watershed restoration efforts are also proposed on the Federal lands within the project area. The Ouachita National Forest will implement a series of activities that will improve water quality for federally listed species, including the Arkansas Fatmucket (T), Rabbitsfoot (T) and Spectaclecase (E) mussels by reducing sedimentation. This work will also help restore pine-bluestem forest communities and reduce wildfire threats in the process. Activities will include improvement, obliteration, closure, or relocation of roads and off-highway vehicle trails. Restoration activities also include non-native invasive species control, prescribed burns, native warm season grass seeding, native cane planting, and woody species control. This project will also serve to strengthen collaboration with local conservation partners and demonstrate the effectiveness of an All Lands approach to improving forest health and resilience as supported by sister USDA agencies.

Other project goals accomplished include 350 acres of glade restoration, installation of a cave gate, 24,000 acres of feral hog control, control of 859 acres of non-native invasive species, and 36,735 acres of terrestrial habitat restored. Other accomplishments on private land or with private landowners include 83 contracts on 11,280 acres for implementation of conservation practices, 85 plans on 7,600 acres for technical assistance and 4 plans on 809 acres for forest management from the AFC, and 134 landowners with over 7,778 acres assisted with implementation of WAWRP project practices.

Oklahoma/Arkansas Woodland Restoration (OAWR) Project

In February 2016, USDA announced 11 new Joint Chiefs' projects totaling $7 million for 2016. The Oklahoma/Arkansas Woodland Restoration 2016- 2018 (OAWR) grant was awarded to both states as well as the Ouachita and Ozark-St. Francis National Forests. In 2016, the Ouachita National Forest used $318,750 in funding in the first year of the project to remove aquatic organism blockages in the Buffalo Creek drainage above Broken Bow Reservoir in Oklahoma, thereby benefiting the threatened leopard darter and improving water quality in the lake. Additional funding to award the project contract included $100,000 from stewardship retained receipts, $40,000 obtained through the Tulsa Field Office of the U.S. Fish and Wildlife Service, and watershed improvement dollars. The Oklahoma NRCS obligated funding to forest landowners within 10 miles of the Ouachita National Forest.

Good Neighbor Authority

For additional information, contact Steve Cole at sncole@fs.fed.us

The Good Neighbor Authority (GNA) allows the Forest Service to enter into cooperative agreements or contracts with States to perform watershed restoration and forest management services on National Forest System (NFS) lands. In 2014, Congress passed 2 laws expanding Good Neighbor Authority: the FY 2014 Appropriations Act and the 2014 Farm Bill. Each law contains slightly different versions.

- The Farm Bill permanently authorizes the Good Neighbor Authority for both the Forest Service and the Bureau of Land Management (BLM) extending it to all 50 States and Puerto Rico. It excludes construction, reconstruction, repair, or restoration of paved or permanent roads or parking areas and construction, alteration, repair, or replacement of public buildings or works; as well as projects in wilderness areas, wilderness study areas, and lands where removal of vegetation is prohibited or restricted.
- The FY 2014 Appropriations Act included a 5-year authorization for the use of GNA in all states with NFS lands to perform watershed restoration and protection services on NFS and BLM lands when similar and complementary services are performed by the state on adjacent state or private lands. Other than the adjacency requirement, there were no exclusions as to type or location of work.

The USFS/NRCS submitted a request in 2015 for funding of Wildland Urban Interface protection measures in Hochatown (eastern OK), to be carried out under a GNA agreement with Oklahoma Forestry Services in future years.

Soils

For additional information, contact Steve Cole at sncole@fs.fed.us

Objective 15 of the 2005 Forest Plan states, "Conduct watershed improvement actions on at least 40 acres per year." Progress toward this objective is reported each year as acres of watershed

improvement or maintenance accomplished. From 2006 – 2016 the objective of conducting 40 acres per year has been exceeded each year.

Soil restoration and maintenance activities are implemented on small projects as a part of watershed improvements on the Ouachita NF. These include such activities as rehabilitating abandoned roads (decommissioning) and gully stabilization. From 2006 to 2016, there were a total of 3,175 acres of soil and water improvement accomplished and reported by the Districts. This amount includes nearly 139 acres of soil erosion control, 1 acre affected by aquatic organism passage, 8.5 acres affected by trail realignment, ½ acre affected by road decommissioning, 1 acre affected by arch culvert reconstruction, and 268 acres of pollinator habitat improvement. The tabulation below displays that progress for each year. In addition, there were other watershed restoration accomplishments spurred by special needs due to excessive erosion and flooding on certain areas of the Forest. Those acres were accomplished during Fiscal Year 2010 and totaled 342 acres. Figures reported for 2016 were derived using the Watershed Improvement Tracking (WIT) database. The Forest Soil Scientist retired prior to 2016; therefore little analysis of this data has been accomplished. The following tabulation displays acres of soil restoration and maintenance accomplished by year:

Acres of Soil Restoration and Maintenance by FY, ONF

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Acres of Soil Restoration and Maintenance	87	45	41	75	64	118	505	1,003	515	304	418

Trends Revealed Through Monitoring

Soil quality monitoring on the Ouachita NF has revealed that the Forest as a whole is staying in compliance with the soil conservation provisions of the Forest Plan. However, there is a need to expand monitoring and collect data on a wider range of soil conditions and management practices such as pre-harvest soil and site conditions, soil nutrient status, prescribed burning, and perhaps biomass removal.

Soils—Emerging Issues

Biomass removal for energy utilization could emerge as a forest management issue in the near future. Additional study is recommended to review effects of woody debris removal on soil resource conditions; however experience and current research have shown that its presence in adequate amounts is critical for soil protection, soil productivity, wildlife sustenance, biodiversity, and as a nutrient pool that can be activated through prescribed fire. Any efforts to accelerate woody debris removal on the Ouachita NF should be prefaced by careful planning and analysis and followed-up by monitoring.

Burned Area Emergency Response (BAER) is a part of soil and water resource assessment and rehabilitation and monitoring work on the Ouachita National Forest. BAER focuses on short-term restoration of natural resource damage occurring as a result of wildfire. All wildfires are reviewed to confirm whether or not they qualify for BAER evaluation and funding. The threshold for requiring a BAER review is 500 acres unless a critical resource is at risk, and then the criteria to trigger a BAER review is 300 acres.

National Best Management Practices for Water Quality Management became a required part of resource monitoring programs on National Forest lands beginning in 2013. In 2015, a total of 6 resource areas on 5 ranger districts were monitored, which included recreation management, vegetation management, roads management, fire management and minerals management.

Accomplishments by year for BAER and National BMP Monitoring activities follow:

Acres of Soil and Water Resource Assessments (BAER) and National BMP Monitoring by FY, ONF

Acres	2012	2013	2014	2015	2016
Soil & Water Resource Assessment (BAER)	685	1,177	2,686	960	0
National BMP Monitoring	0	687	529	71	1868

Trends Related to Forest Plan Objectives and/or Desired Conditions

The desired condition of Terrestrial, Riparian, and Aquatic Ecosystems on the ONF is, in great part, dependent upon the health of the soil resources. When fully staffed, soil monitoring is conducted through various avenues to ensure that Forest Plan standards for maintaining soil and water quality are being met. Factors such as soil erosion and soil compaction are a threat to sustained soil productivity as well as to desired water quality. Preparation and follow-up work for watershed projects and monitoring activities serve as a check on current conditions of the soils, effects to soils from project implementation, and what mitigating measures may be required to bring the soils to the desired level of health. Where Best Management Practices (BMPs) are implemented, soil health and water quality are more likely to be preserved during and after Forest management activities. To date, on a Forest-wide basis, monitoring and observations have revealed that management actions in general have not had a consistently detrimental impact to soil conditions. Therefore, there are currently no recommended changes to ONF soils standards or Forest management practices.

Fire Influences and Fuels

For additional information, contact Lance Elmore at lelmore@fs.fed.us

Fire regime includes how frequently fires occur and the season of the burn (dormant or growing season). A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993). For purposes of the M&E Report, the cool or dormant season is considered to be October through February, and the growing season, March through September. Most of the natural communities of the Ouachita NF are slightly, moderately, or highly dependent on certain fire regimes to restore and maintain “good” conditions.

The Forest is in the process of developing a Fire Management Plan. Meanwhile, there are two forest-wide design criteria (or standards) that guide fire suppression actions on the Ouachita NF. These standards guide the fire management program for the Ouachita National Forest and provide comprehensive guidelines for the suppression of wildland fire.

> *FS001 The full range of wildland fire suppression tactics (from immediate suppression to monitoring) may be used, consistent with Forest and resource management objectives and direction.*

FS002 Suppress wildfires at minimum cost, considering firefighter and public safety, benefits and values to be protected, consistent with resource objectives. All human-caused wildland fires will be suppressed.

Fire Management activities across the Forest are relatively stable with a general trend of less than 100 wildland fires occurring annually, with the majority of those being human-caused, burning an average of less than 100 acres per fire (calculated adding average acres/fire/year and dividing by 5 years). Lightning activity as a source of fire ignitions plays an important but relatively small role in fire cause, with about one lightning fires occurring every month.

Fire Activity by FY 2006 - 2016, ONF

Objective or Activity	FISCAL YEAR										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Wildland Fire (#)	187	68	41	60	75	130	43	22	25	42	81
Wildland Fire (Acres)	23,185	14,347	460	2,247	2,029	7,720	1,795	3,305	3,428	2,255	2,964
Wildland Fire (Average Acres)	124	211	11	37	27	59	42	150	137	57	36
Lightning caused (#)	46	20	4	7	12	68	10	10	5	1	3

At the time the Forest Plan was approved, wildland fire was a general term describing any non-structural fire that occurred in wildland. Wildland fire was categorized into 3 types:

Wildfire – Unplanned ignitions or prescribed fires declared a wildfire. All wildfires were managed with the single objective of controlling/confining the fire so as to provide protection to the public and firefighters and to limit damages to the extent possible
Fire Use Fires – Unplanned ignitions ignited from a natural source managed to achieve resource benefit objectives
Prescribed Fires – Planned ignitions to achieve resource goals, objectives, and benefits

The Wildland Fire Executive Council, a joint effort between the Departments of Interior and Agriculture, approves guidance for implementation of federal wildland fire management policy that allows wildfire management for more than one objective or to change as fires develop. It recognizes that objectives are affected by changes in fuels, weather, topography, and involvement of other government jurisdictions having differing missions and objectives. All responses to wildland fire continue to be based on objectives and constraints in the Forest Plan. The guidance still defines wildland fire as a general term describing any non-structural fire that occurs in wild land; however, the policy now directs that there be only 2 categories of wildland fire:

Wildfires – unplanned ignitions and prescribed fires declared a wildfire, and
Prescribed Fires – planned ignitions.

The fuels treatment program has resulted in gains toward restoration of ecosystems, reduction in risk of unwanted wildfires, and wildlife habitat improvement. Legal mandates, congressional intent

expressed in annual budgets, natural disturbance events, and other issues or factors beyond the control of the fire program all influence performance.

Opportunities to move toward desired conditions through the management of wildfires for multiple objectives have been increased; however, the goal to treat 180,000 acres of the Forest each year with prescribed fire has not been reached in any of the last 11 years. Efforts are made to utilize all opportunities to increase treatments, including growing season burns. Partnering with state agencies, non-governmental organizations, and private landowners through agreements, fire regime condition class and ecosystem condition improvements are being achieved on a landscape scale that includes crossing agency boundaries. Treatment activities across the Forest to move landscapes toward desired conditions, through prescribed fire, mechanical methods, and integrated activities have remained fairly constant the last few years. This trend is expected to continue.

Prescribed Fire Program by Purpose (acres) by FY, ONF

Year	Fuel Reduction	Wildlife Habitat Improvement	Site Prep	Wildland Fire	Ouachita NF Total
2006	36,855	5,760	478	23,185	66,278
2007	83,136	61,299	919	14,347	159,701
2008	89,197	30,106	985	460	120,748
2009	92,262	23,981	3,882	2,247	122,372
2010	101,173	33,464	6,151	2,029	142,817
2011	66,777	20,242	1,981	7,720	96,720
2012	72,219	24,170	3,345	1,795.4	101,529
2013	79,086	11,554	2,220	3,305.3	96,165
2014	87,341	10,870	916	0	99,127
2015	70,471	2,998	388	2,255	77,743*
2016	115,470	11,530	319	2,964	130,283

*GIS acres sum to 73,857; however, reports from the Fire Management Office indicate that 2,255 acres were wildland fire not reported in GIS and that overall, 77,743 acres of Prescribed Fire were accomplished in 2015.

Post-burn: Open understory in mixed pine/hardwood stand (left) herbaceous growth (right).

Where public safety is threatened and benefits to resources within the watershed may be realized, the Forest Service is authorized to enter into domestic cooperative agreements or grants for purposes such as the protection, restoration, and enhancement of fish and wildlife habitat and other resources and for the reduction of risk from natural disaster. While the number of acres treated through prescribed burning utilizing the cooperative agreements like the Steven's Act or the Wyden Amendment is not large, these acres critically influence the Forest's ability to conduct prescribed fire projects safely and efficiently and allow for landscape treatment projects and projects that go beyond NFS lands. Such agreements are for small tracts of an in-holding or an adjacent parcel that allows use of natural or pre-existing features for control lines. Acres treated with prescribed fire under agreement are shown in the following tabulation.

Acres of Prescribed Fire accomplished under Agreement by FY, ONF

2006	>4,000	**2009**	>3,000	**2012**	0	**2015**	**0**
2007	>9,000	**2010**	2,728	**2013**	2,480	**2016**	**2,326**
2008	2,563	**2011**	1,394	**2014**	2,828		

Prescribed fire is consistently used to aid in the prevention of catastrophic wildfires by removing fuel loads and is essential to improve soils and promote forest and vegetation community health. The Forest is comprised of primarily fire-dependent communities, particularly the pine-dominated communities, and is dependent on a frequent fire regime for Forest health. As shown in the following tabulation, the annual prescribed fire acres burned by community improved in the Pine Oak Forest in 2014 primarily from accelerated woodland restoration activities. For 2016, acres treated were fairly consistent with previous years, except for treatments in the pine-bluestem community which exceeded the past 11 years.

Community Type Treated with Prescribed Fire by FY, ONF

	Annual Desired Range							
	Pine Oak Forest		**Pine Oak Woodland**		**SLP Bluestem**		**Dry-Mesic Hardwood**	
Year	**Acres 56,000 to 80,000**	**7-10%**	**Acres 37,000 to 80,000**	**15-33%**	**Acres 31,000 to 68,000**	**15-33%**	**Acres 16,000 to 22,000**	**7-10%**
2006	29,568	4%	8,235	3%	7,717	5%	11,196	5%
2007	46,238	6%	15,412	6%	51,617	26%	12,736	6%
2008	59,702	6%	9,764	6%	30,000	14%	15,324	5%
2009	46,405	5%	15,469	10%	37,105	19%	19,799	7%
2010	47,812	7%	21,478	8%	32,551	18%	25,633	8%
2011	26,446	4%	11,163	4%	19,489	11%	9,854	3%
2012	61,099	8%	20,962	7%	25,102	14%	16,063	5%
2013	61,094	8%	19,170	6%	23,198	13%	15,597	5%
2014	72,115	9%	14,420	6%	12,692	8%	9,866	4%
2015	No Report	No Report	No Report	No Report	No Report	No Report	No Report	No Report
2016	48,320	5%	8,630	5%	60,651	28%	9,712	4%

The Forest Plan recognizes the importance of prescribed fire mimicking the role that wildfire played in the development of the fire-dependent ecosystem of the Ouachita NF; and in formulating

the Plan, a goal of reintroducing fire onto the landscape was established. Prescribed fires conducted during the growing season, generally described as the period of time from leaf emergence to beginning of plant dormancy, are to be an integral part of the functioning ecosystem. Although fire reports generally include fires from April through September as "growing season," analysis under the Species Viability Evaluation (SVE) counted fires March through September as growing season. For compatibility with the SVE analysis, prescribed burns accomplished from March through September annually are reported here. Implementing prescribed burns during the growing season to achieve the desired ecological conditions will be continued as a management practice.

Acres of Prescribed Fire during March – September, ONF, 2006 - 2016

	YEAR										
Acres of Prescribed Fire	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	18,162	17,327	92,614	57,102	112,957	83,925	82,254	86,753	80,889	77,743	63,623

All wildland fires have the potential to pose threats to communities and developments adjacent to the Ouachita NF. These identified "At Risk Communities" and the Wildland Urban Interface (WUI) areas receive the highest priority for fuel reduction treatments. Wildfire hazard reductions, to enhance protection of homes and human lives in the interface areas, are coordinated with the state forestry agencies through programs such as FireWise. The FireWise program works with fire departments and civic organizations to make communities safer from the threat of wildfire through mitigation projects and community education initiatives. Through funding from the US Forest Service, the Arkansas Forestry Commission and Oklahoma Forestry Services educate homeowners in the WUI about proactive steps they can take to protect their homes. Both states encourage communities to participate in the FireWise program by offering grants and free community assistance. Assistance to complete Community Wildfire Protection Plans is a key feature of the FireWise program.

Terrestrial Non-native Invasive Species

In response to the 1999 "Southern Region Noxious Weed Strategy" the Ouachita NF designated a Forest Non-native Invasive Species (NNIS) Coordinator and also one for each District. In 2009, the Ouachita NF developed a prioritization process to address, as funding becomes available, the prevention and control of NNIS. A Desired Condition for Terrestrial Ecosystems as stated in the Forest Plan is, *"Where native species have been displaced by non-native or off-site species, systems will be restored over time to native species composition."*

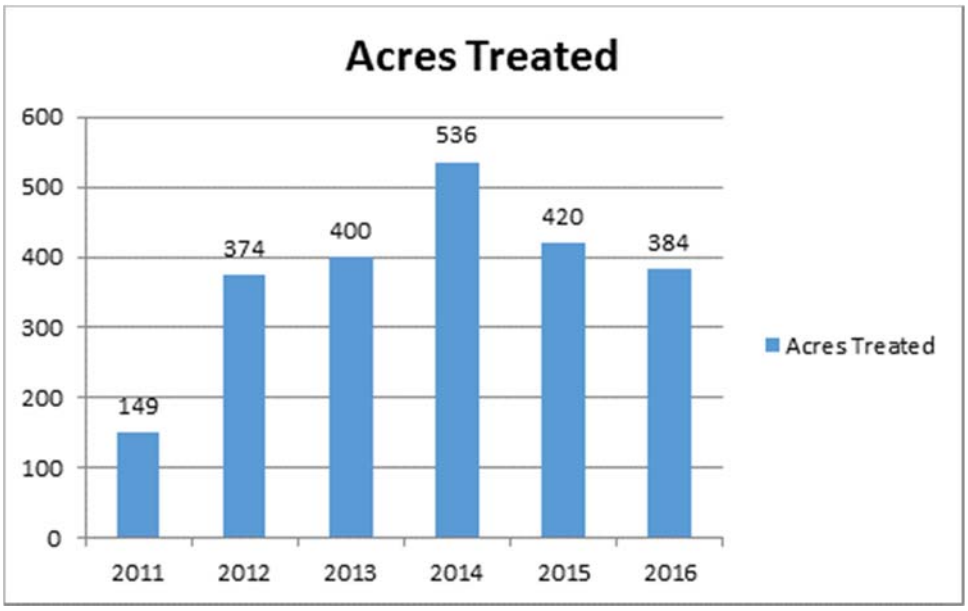
The Ouachita NF has treated, on average (2011-2016), 377 acres of non-native invasive species per year. This exceeds the treatment of 300 acres per year in Objective 3 of the Forest Plan. Treatment of non-native invasive species relates to priorities of improving forest health by reducing invasive species on National Forest System lands. The Forest Plan also provides for use of an integrated pest management approach to prevent or reduce damage to forest resources from non-native, invasive species.

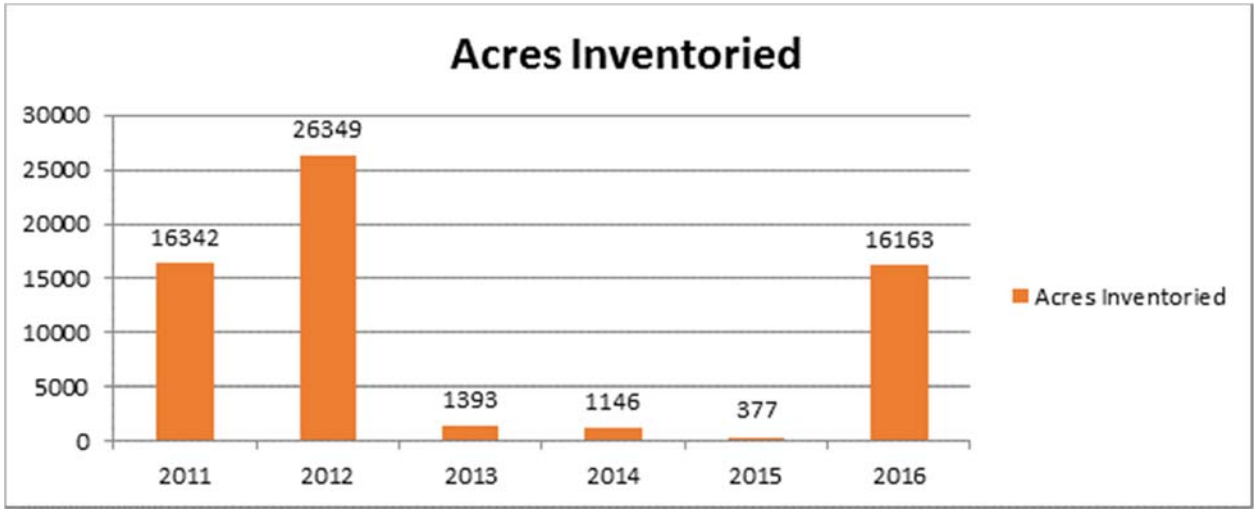
Forest Plan Objective 29 requires the following: "*Conduct inventories to determine the presence and extent of non-native invasive species in wildernesses by 2010; based on results of these inventories, develop and implement appropriate monitoring and treatment programs."*

The Ouachita NF not only treats acres for non-native invasive species but also surveys areas and locates new sites that need treatment. The information is entered into the Natural Resource Information System (NRIS) database. The NNIS inventories have been completed on 35,466 acres of wilderness inventory and on 4 of the 6 wilderness areas within the Forest: Dry Creek, Poteau Mountain, Blackfork, and Flatside. The most common invasive species is S*ericea lespedeza*. Infestations most often appear along roads and trails.

During 2016, the Ouachita NF completed a District-wide EA that addresses management of NNIS that will allow rapid response to areas requiring treatment of new infestations as they are located. This EA will serve as the template for other Districts to prepare environmental documentation to address NNIS when there is a need.

In 2016 there were a total of 384 acres of non-native invasive plants treated and a total of 16,163 acres of inventory completed.





Insects and Disease

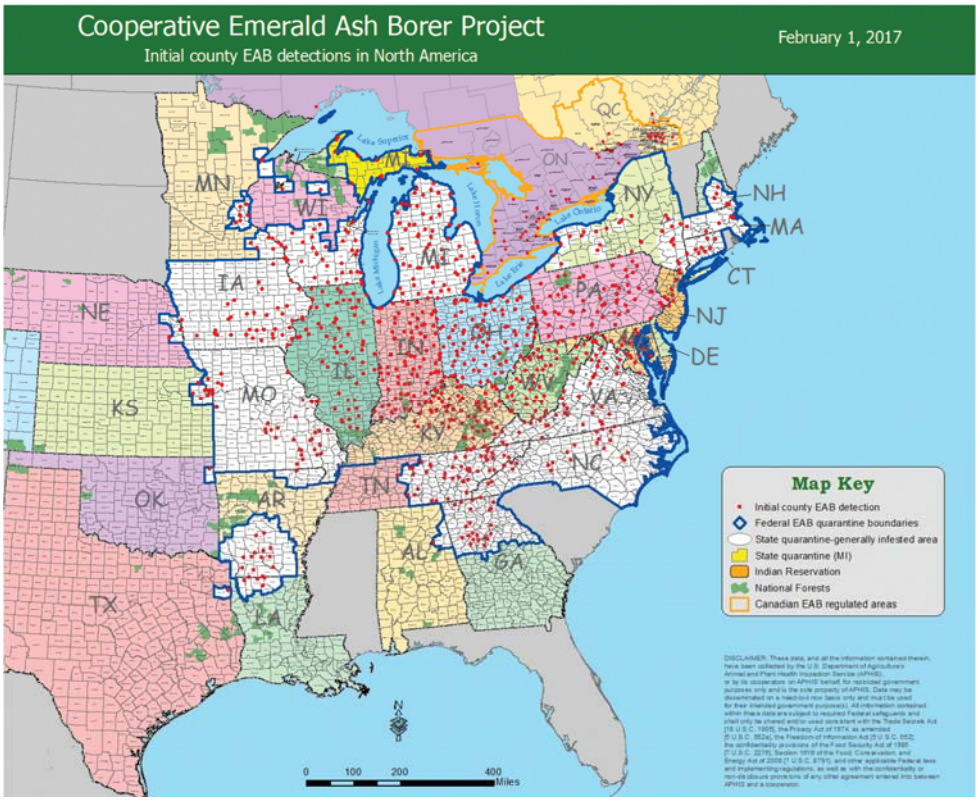
For additional information, contact Jaesoon Hwang at jaesoonhwang@fs.fed.us

The Ouachita NF continues to participate in annual southern pine beetle (SPB) trapping protocols that attract the SPB and forecasts activity based on the number of trap catches throughout the south. During 2016, 11 traps were deployed in the Ouachita NF, and no SPB were found from these traps. Throughout Arkansas, an additional 11 traps were deployed, and all traps were negative for SPB. The Ouachita NF participates in the SPB prevention program which focuses on thinning, burning, and restoration of pine stands to keep stands below the volume and spacing requirements known to contribute to SPB spot growth (timber loss). In 2016, a first thinning was done for one site on the Ouachita NF near Royal, AR.

Early detection and monitoring of insects and pathogens are essential for preventing introduction and spread of these insects into new areas. Laurel wilt is a new, emerging disease causing major damage to avocado and redbay trees since it was first reported in Georgia in 2002. Causal fungus is vectored by the redbay ambrosia beetle, and the disease recently has been found in 3 southern counties of AR—including 2 new counties in 2016. It appears that they are disseminated from northern LA. Since sassafras is known as a host, this disease poses a risk to sassafras populations within Arkansas. Currently, no statewide survey is being done, however the Forest Service is monitoring the spread of the disease in the southeastern states with state and federal aid. Statewide public outreach to disseminate educational materials is planned in 2017.

Oak decline is an endemic problem in many states including Arkansas. Complex damage is caused by multiple biotic and abiotic factors including tree age, climate, site condition, fungi, and insects. The most severe damages have been found on the Ozark-St. Francis NF and private stands in north central Arkansas in recent years. Most parts of the Ouachita NF are designated as a “high risk” area for oak decline based on site factors. There are isolated areas within the Ouachita NF showing declining trees. Most of the factors involved in the decline cannot be controlled, thus early harvesting, silvicultural treatments, and regeneration are suggested as management options. Such treatments should ultimately lead to a healthier, more resilient, and more productive forests.

The Ouachita NF is dealing with the invasive emerald ash borer (EAB). This beetle has rapidly moved from its entrance point into the United States (Michigan in 2002) to Arkansas (2014). In Arkansas, 14 counties (13 central/southern counties and one northeastern county—newly found in 2016) -- are confirmed for the presence of EAB and are now under quarantine for the movement of ash lumber and products. The eastern part of the Ouachita NF is either confirmed for EAB or in the buffer zone. Nineteen additional counties in a buffer zone around counties where EAB has been confirmed are also quarantined. Human activities involving movement of infested wood materials are known to play a major role in spreading the insect, thus the Ouachita NF has been active in notifying the public of the destructive and invasive nature of this pest for years. Firewood permittees now receive information on the pest when they obtain their permit. They are asked to “burn it where you obtain it” and to not transport firewood from their campsite or outside of the area where it is collected.



Data sources: USDA Animal and Plant Health Inspection Service, Plant, Protection & Quarantine (USDA/APHIS/PPQ) and the Canadian Food Inspection Agency (CFIA)

Insects and Disease - Emerging Issues

Climate change in the form of higher temperatures has the capacity to change the ecological scenario in many ways. One way would be that seemingly innocuous insects become pests, because instead of the one annual life cycle that was their norm, they can now have 2 or perhaps 3. This has proven to be the case with the mountain pine beetle in the West where it has gone from a single generation per year to 2 per year. Another change might be the weather patterns relating to rainfall and when it is received. Certainly high temperature summers and low corresponding rainfall can be a detriment to existing forests and could cause some change in competitive advantage between species with those most drought-tolerant being the best survivors in this scenario. It is not likely that species on the Ouachita NF or threats to species will change dramatically over the next 5 years due to climate change, but if summers continue dry and hot for a longer period, the Forest could experience stresses and or changes. It is difficult on a large scale to quantify such changes. The Forest will need to be flexible enough with Forest management to begin taking advantage of the changes when they become inevitable.

Terrestrial Habitats - Seral Stages

Vertical structure within each vegetation community is represented by age or diameter classes. Some plant and animal species can do well within any of the seral stages; however some species are obligates for or can only survive in certain stages. The early seral stage is particularly important to many species, such as White-tailed Deer, Northern Bobwhite, Prairie Warbler, and snakes seeking small mammals as food sources.

- Early seral structure includes the 0-5 year-old grass/forb stage plus the 0-10 year-old seedling/sapling/shrub stage. (In Woodland communities, early seral stage also includes 40 percent of the late seral stage).
- Mid-seral structure includes all age-classes and diameters in the poletimber stand condition class
- Late seral structure includes mature and immature sawtimber-size trees with diameters at breast height of greater than 9.5 inches for pine and 12 inches for hardwood

Early Seral Stage

Based on 2005 Forest Plan projections, early seral stage habitat should continue to increase and then stabilize at approximately 50,000 to 60,000 acres after 10 years (USDA Forest Service 2005b, p. 175.) Forest Plan Objective 006 states, "*Establish 5,500 acres per year in grass/forb condition within the pine-oak forest subsystem while maintaining 60-90 percent in mature to late seral condition."* Since FY 2006, the annual Ouachita NF monitoring and evaluation report has noted that the Forest has failed to meet that objective. For 2016, about 680 acres of early seral stage habitat was created.

A silviculture/wildlife study is recommended to review why the level of early seral habitat creation remains so far below the Forest Plan objective. Lack of creation of early seral habitat is not a new issue for the Ouachita NF. Review of older monitoring and evaluation reports shows a 1990 Forest Plan goal of creating 5,800 acres annually to meet Forest Plan minimum management requirements. The following tabulation presents acres of early seral stage habitat created by timber harvesting since 2000.

Acres of Early Seral Stage Habitat Created by Timber Harvesting by FY, ONF

1990 Forest Plan – Goal: 5,800 acres annually	
Year	Acres of Early Seral Habitat Created
2000	2,246
2001	953
2002	772
2003	2,268
2004	1,866
2005	3,031

2005 Forest Plan – Goal: 5,500 acres annually	
Year	Acres of Early Seral Habitat Created
2006	2,602
2007	4,363
2008	3,869
2009	2,151
2010	2,676
2011	1,190
2012	2,605
2013	925
2014	606
2015	1,271
2016	676

The early seral condition has about a 10-year lifespan and is often in short and/or declining supply. Current forest management has resulted in a forest that is growing older, because the suitable acreage regenerated from the older age groups is less than the acreage of timber entering into the early seral age class. Continuing this trend will ultimately result in a forest well over the desired rotation age with far too little acreage in the early seral stages to achieve species viability for dependent species.

Ouachita NF communities that maintain an herbaceous ground-cover and/or shrub habitat component within the Forest are pine-bluestem and pine-oak woodland, as well as several of the rare upland vegetation communities-dry oak woodland, acidic cliff and talus, acidic glades and barrens, novaculite glade and woodland, montane oak, and calcareous prairie. These communities cover approximately 30 percent of the Forest. The herbaceous and shrub habitat is annually maintained in a forest-wide mosaic on approximately 540,000 acres.

In the pine woodland communities, thinning and frequent prescribed burns support approximately 40 percent of those communities with herbaceous ground cover. Naturally limiting factors such as elevation, rainfall, aspect, slope, and/or thin soils, maintain primarily an early successional condition within the acidic cliff and talus, acidic glades and barrens, novaculite glade and woodland, and dry oak woodland communities. Montane oak naturally provides a high elevation shrub condition, and the calcareous prairie provides herbaceous groundcover and shrubby vegetation. A frequent to occasional fire treatment is essential to discourage the woody encroachment and to maintain the early successional condition within all these systems.

Some of the species that are highly dependent upon early seral (grass/forb and shrubland) habitat are listed in the following table with their 2005 and 2010 SVE scores. The SVE Scores declined from 2005 to 2010 early seral stage-dependent species for 14 of the 16 species known on the Forest. This reflects lack of development of early seral stage habitat.

Comparison of SVE Scores for Early Seral Stage-Dependent Species, ONF

Common Name	*Scientific Name*	Status	SVE Score	
			2005	2010
American Burying Beetle	*Nicrophorus americanus*	Federally Endangered	1.97 Fair	1.97 Fair
Diana Fritillary	*Speyeria diana*	RF Sensitive	2.5 Fair	1.92 Fair
A Twistflower	*Streptanthus squamiformis*	RF Sensitive	2.46 Fair	1.65 Fair
Prairie Warbler	*Dendroica discolor*	MIS	2.5 Fair	2.15 Fair
Northern Bobwhite (Quail)	*Colinus virginianus*	MIS	2.5 Fair	2.09 Fair
White-tailed deer	*Odocoileus virginianus*	MIS	2.21 Fair	2.19 Fair
Wild Turkey	*Meleagris gallopavo*	MIS	2.25 Fair	2.25 Fair
American Kestrel	*Falco sparverius*	Viability Concern	2.75	2.2

Common Name	*Scientific Name*	Status	SVE Score	
			2005	2010
			Good	Fair
Painted Bunting	*Passerina ciris*	Viability Concern	2.56 Good	2.39 Fair
Orchard Oriole	*Icterus spurius*	Viability Concern	2.5 Fair	2.3 Fair
Bewick's Wren	*Thryomanes bewickii*	Viability Concern	2.5 Fair	1.93 Fair
White-eyed Vireo	*Vireo griseus*	Viability Concern	2.5 Fair	2.11 Fair
Southern Prairie Skink	*Eumeces septentrionalis obtusirostris*	Viability Concern	2.5 Fair	2.09 Fair
Timber Rattlesnake	*Crotalus horridus*	Viability Concern	2.5 Fair	2.12 Fair
Great Plains Skink	*Eumeces obsoletus*	Viability Concern	2.5 Fair	2.02 Fair
Western Diamondback Rattlesnake	*Crotalus atrox*	Viability Concern	2.4 Fair	2.0 Fair

2005, 2010 and Projected 2015 Percent/Early Seral Stage and Condition by Community Type, ONF

	Percent/Early Seral Stage and Condition by Community		
Community	2005	2010	2015 Projected
Ouachita Shortleaf Pine-Oak Forest and Woodland			
Ouachita Pine-Oak Forest	2.48 Poor	1.4 Poor	6-14 Good/Very Good
Ouachita Pine-Oak Woodland	0.0 Poor	1.4 Poor	6-14 Good/Very Good
Ouachita Pine/Bluestem Woodland	2.0 Poor	1.4 Poor	3-9 Good/Very Good
West Gulf Coastal Plain Pine-Hardwood Forest (Flatwoods)	1.7 Poor	3.2 Poor	6-14 Good/Very Good
Ouachita Dry-Mesic Oak Forest	0.79 Poor	1.2 Poor	4-10 Good/Very Good

Mid-Seral Stage

The mid-seral immature vertical structure condition (poletimber) is perhaps the least beneficial to wildlife species without management manipulation. This seral stage provides important cover for nesting birds and other animals looking for bedding and/or thermal cover. The closed canopy prevents sunlight from reaching the forest floor, limiting the development of herbaceous groundcover and shrubby understory. This condition does provide some foraging and cover for a few species. For the majority of wildlife, this vertical structure condition provides lower quality habitat than early or late seral stages. According to the SVE scores, the pine dominated communities are maintaining a "Good "or "Very Good" condition; however the dry-mesic hardwood community is still in a "Poor" condition.

2005, 2010 and Projected 2015 Percent/Immature Mid-Seral Stage and Condition by Community, ONF

Community	Percent/ Immature Mid-Seral Stage and Condition by Community		
	2005	2010	2015 Projected
Ouachita Shortleaf Pine-Oak Forest and Woodland			
Ouachita Pine-Oak Forest	28.6 Very Good	20.3 Very Good	10-40 Good/Very Good
Ouachita Pine-Oak Woodland	18.3 Very Good	40.4 Good	10-40 Good/Very Good
Ouachita Pine/Bluestem Woodland	32.0 Good	20.4 Good	<10-20 Good/Very Good
WGCP Pine-Hardwood Forest (Flatwoods)	23.6 Very Good	19.4 Very Good	11-40 Good/Very Good
Ouachita Dry-Mesic Oak Forest	57.2 Poor	28.3 Poor	15-35 Good/Very Good

Late Seral Stage

The late seral vertical structure condition (immature and mature sawtimber) provides habitat and forage for a suite of habitat specialists such as the Scarlet Tanager and Cerulean Warbler that specifically require tall trees, as well as habitat generalists. This condition provides important habitat for high canopy nesting and roosting, suitable structure for cavity development and excavation, and relatively large volumes of seed and hard mast. Components of this condition include snags, large and small diameter hollow trees used as den trees, downed woody debris, and large trees near water that provide critical habitat for many wildlife species. Mature pine forest consists of pines greater than 80 years old.

Acres of Late Seral Stage, by FY, ONF			
Year	Mature Pine Forest	± Previous Year and % change from Previous Year	± from 2005 and % change from 2005
2005	435,112	N/A	N/A
2006	565,683	+130,600 + 30	+130,600 + 30
2007	495,176	-73,500 - 12	+ 60,100 + 14
2008	507,068	+11,892 + 2	+71,956 +14
2009	553,923	+46,855 +9	+118,811 +27
2010	588,733	+34,810 +6	+153,621 +35
2011	568,851	-19,882 -3	+133,739 +31
2012	565,235	-3,616 -1	+130,123 +30
2013	581,925	+16,690 +3	+146,813 +34
2014	599,830	+15,095 +3	+164,718 +38
2015	No Report	No Report	No Report
2016	588,246	-11,584 -2	+153,134 +35%

According to the September 2003 Continuous Inventory of Stand Conditions database used for the 2005 SVE, approximately 62 percent of the Ouachita NF was in the late (mature) vertical structure condition. The 2010 SVE indicated that 73 percent of the Ouachita NF is now in late seral structure stage, an increase.

2005, 2010 and Projected 2015 Percent Late Seral Stage and Condition by Community, ONF

Community	Percent Late-Seral Stage and Condition by Community		
Ouachita Shortleaf Pine-Oak Forest and Woodland	**2005**	**2010**	**2015 Projected**
Ouachita Pine-Oak Forest	**68.9 Good**	**78.3 Good**	**60-90 Good/Very Good**
Ouachita Pine-Oak Woodland	**81.7 Good**	**58.2 Fair**	**60-90 Good/Very Good**
Ouachita Pine/Bluestem Woodland	**66 Good**	**78.2 Good**	**60-90 Good/Very Good**
WGCP Pine-Hardwood Forest (Flatwoods)	**74.7 Very Good**	**77.4 Very Good**	**60-90 Good/Very Good**
Ouachita Dry-Mesic Oak Forest	**47.1 Poor**	**53.8 Fair**	**60-90 Good/Very Good**

Other Terrestrial Wildlife Habitat Components

In addition to vertical structure other habitat components are also rated during Species viability Analysis:
Cave and Mine Habitat
Snags, Cavity/Den Trees, Downed Logs/Woody Debris
Large Trees near Water
Mast Production
Old Growth Habitat

Cave and Mine Habitat

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The forest-wide SVE condition score for cave and mine habitat in 2005 was 4.00 and remains at 4.00 for the 2010 SVE, both "Very Good". Mine and cave openings have been gated to provide additional protection to this habitat type. During mine surveys in 2016, 8 northern long-eared bats, *Myotis septentrionalis* (a newly listed federal species) were identified in a single location. This is 4 more than were inventoried during 2015. Most mines have been gated with bat-friendly gates.

Bear Den Cave Closure
Source: USFS

Snags, Cavity/Den Trees, Downed Logs, and Woody Debris

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Snags, cavity or den trees, and down woody debris on the forest floor are important natural, structural, and terrestrial habitat components. The dependency of cavity-nesting wildlife species on an adequate and continuous supply of snags and cavity trees is well documented. Primary excavators (*e.g.*, most woodpeckers) require snags of certain size and hardness to create nesting and roosting cavities. Secondary cavity-nesting species are, in turn, dependent on the cavities created by the primary excavators. Most cavity-nesting birds are insectivores and play an important role in forest ecology and in the control of insect pests.

Some 38 species of Arkansas and Oklahoma birds excavate nesting holes, use cavities resulting from decay, or use holes created by other species in dead or deteriorating trees. Fifty-eight species of amphibians, reptiles and mammals are known to use snags or the resulting dead and down material. Snags also provide perches for birds of prey and foraging substrate for a wide variety of wildlife. The 2005 forest-wide SVE condition score for snags, cavity (den) trees and down woody debris was 4.00 ("Very Good") and remained at 4.00 ("Very Good") for 2010. No additional SVE analysis was completed in 2015 or 2016.

Large Trees near Water

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Current direction provides for the conservation of streamside management areas as unsuitable for timber management. Large trees near water have, therefore, been retained within the riparian and floodplain areas forest-wide. Some of the bird species that benefit from this habitat include the Bald Eagle, Cerulean Warbler, and the Pileated Woodpecker, as well as the federally endangered Indiana Bat, and two Regional Forester Sensitive Species, the Southeastern Myotis and Eastern Small-footed Bat. Forest-wide SVE condition score in 2005 for the large trees near water habitat was 4.00 and remained at 4.00 ("Very Good") for 2010. No additional SVE analysis was completed in 2015 or 2016.

Mast Production

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Acorns and hickory nuts (hard mast) are important habitat elements for several wildlife species, including white-tailed deer, Eastern Wild Turkey, squirrel, and black bear. Mid- to late-successional oak, hickory, and hardwood-pine forests provide an important source of hard mast on the Forest. The availability of acorns has been demonstrated to influence population dynamics of demand species and non-game animals such as white-footed mice. There were no reports of hardwoods greater than 50 years old or greater than 100 years old for 2015.

Hardwoods greater than 50 years old are used to determine hard mast capability. There were 425,364 acres of hardwoods greater than 50 years old in 2016 compared to a slightly lower number of acres (423,961) in 2012-2013. There was no report for 2015. The difference is small and does not imply trends. Management activities critical to mast producing tree species and predominately hardwood communities are thinning and prescribed burning.

Acres of Mast Capability by FY, ONF

Acres (Acres & %)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Mast Capability	433,250	468,172	474,384	452,111	454,787	394,357	422,992	423,961	423,961	421,072	No Report	425,364
± Previous Yr & %	N/A	+35,000 + 8	+>6,000 + 1	- 22,273 - 5	+2,676 +1	-60,430 -13	+28,635 +7	+969 0	0 0	-2,889 -1	No Report	+4,292 +1
± from 2005 & %	N/A	+35,000 + 8	+>41,000 + 9	+18,861 + 4	+21,537 +5	-38,893 -9	-10,258 -3	-9,289 -2	-9,289 -2	-12,178 -3	No Report	-7,886 -2

Hardwoods greater than 100 years old are used as a surrogate for mature hardwood forests. In 2014, there were 80,600 acres of hardwood forest greater than 100 years old (4.5% of the Forest) compared to 70,343 acres greater than 100 years old in 2012-2013. This is an increase of more than 10,000 acres since 2012. In 2011, there were 75,743 acres of hardwood forest greater than 100 years old (4.2% of the Forest).

Acres of Mature Hardwood Forest by FY, ONF

Acres (Acres & %)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Mature Hardwood Forest	50,959	51,873	130,343*	52,553	58,689	73,830	75,743	70,343	70,343	80,600	No Report	99,709
+ Previous Yr & %	N/A	+>900 + 2	+78,500 + 251	77,790 - 59	+6,136 +12	+15,141 +26	+1,913 +3	-5,400 -7	0 0	+10,257 +15	No Report	+19,109 +24
+ from 2005 & %	N/A	+>900 + 2	+79,400 + 255	+1,594 + 3	+7,730 +15	+22,871 +45	+24,784 +49	+19,384 +38	+19,384 +38	+29,641 +58	No Report	+48,750 +96

* Data reported for 2007 appear to be in error. No major storm events, insect infestations or timber treatments or harvest occurred that would have caused a decrease of 59% from 2007 to 2008. Acres of Mature Hardwood Forest in 2008 are consistent with acreages reported for 2005 and 2006.

Old Growth Habitat

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The fifth component of Terrestrial Habitat is Old Growth Habitat. Approximately 79,000 acres of the Ouachita NF are managed with an emphasis on pine-grass old growth restoration within Management Area 21, Old Growth Restoration. Thirty-six separate units of between 600 and nearly 6,000 acres are managed for pine-bluestem old growth forests and other old growth conditions associated with frequent fire. Maintenance or restoration of upland mixed hardwood old growth and of pine-oak and oak-pine old growth forests are accomplished in these Ouachita and West Gulf Coast Plains vegetation systems: Mesic Hardwood Forests, Montane Oak Forests, Pine-Oak Forests, Pine-Oak Woodlands, Shortleaf Pine-Bluestem Woodlands, Riparian, Large Floodplains, Dry Oak Woodlands, Dry–Mesic Oak Forests, Small Stream and River Forests, Forested Seeps and Novaculite Glade and Woodland.

The old growth habitat SVE score is an average of the SVE scores of all the communities containing old growth as previously listed. The 2005 forest-wide SVE condition score for 'old growth' conditions was

2.62 (“Good”). The 2010 SVE score declined to 2.29 (“Fair”). The Key Factors/Indicators that influenced the SVE score were early seral, fire regime and road density. The SVE score was also influenced by comparison of datasets that had changed from the data used in the 2005 analysis. Management activities critical to old growth habitat are thinning and prescribed burning. No additional SVE analysis was completed in 2015 or 2016.

Terrestrial Management Indicator Species and Wildlife Habitat Management

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Management indicator species are analyzed separately from the threatened and endangered species. Northern Bobwhite and Red-cockaded Woodpecker were included as both Species Viability Evaluation (SVE) and Management Indicator Species (MIS). National Forest Management Act regulations, adopted in 1982, and under which the 2005 Forest Plan was completed, require selection of MIS during development of forest plans (36 CFR 219.19(a)). Reasons for their selection must be stated.

MIS are selected “because their population changes are believed to indicate the effects of management activities” (36 CFR 219 (a)(1)). Where appropriate, MIS shall represent the following groups of species (36 CFR 219 (a)(1)):

1. Threatened and endangered species on State and Federal lists,
2. Species with special habitat needs,
3. Species commonly hunted, fished, or trapped,
4. Non-game species of special interest, and
5. Species selected to indicate effects on other species of selected major biological communities.

The Forest Plan identified 7 terrestrial MIS, and with the exception of deer, all are bird species. Management indicator species (MIS) serve as indicators of habitat condition for species occurring on the Ouachita NF and allow measurement of a select few to represent other wildlife species in a variety of habitats across the ONF. MIS are monitored to determine if changes in the species indicate the effects of management activities. Periodically, the specialists of the Ouachita NF prepare a Management Indicator Species Report. The last such report was completed in November, 2008.

The MIS concept has been reviewed and critiqued by the scientific community, and the proper uses and limitations of the indicator species concept have been identified. Generally, caution is advised against overreaching in use of indicator species, especially when making inferences about ecological conditions or status of other species within a community. Such caution is needed because many different factors may affect populations of each species within a community, and each species’ ecological niche within a community is unique. Maintenance and improvement of habitat for MIS are addressed by objectives, design criteria, and Management Area allocations; however specific information for each of the species is collected and reported here and in periodic Management Indicator Species Reports. The following tabulation includes the 24 MIS for the Ouachita National Forest under the 2005 Forest Plan.

MIS Species for the Ouachita NF

Common Name	Scientific Name	Common Name	Scientific Name
Terrestrial MIS		***Stream and River MIS***	
Eastern Wild Turkey	*Meleagris gallapavo*	Yellow Bullhead	*Ameiurus natalis*
Northern Bobwhite	*Colinus virginianus*	Pirate Perch	*Aphredoderus sayanus*
Pileated Woodpecker	*Dendroica discolor*	Highland Stoneroller	*Campostoma spadiceum*
Prairie Warbler	*Dryocopus pileatus*	Creek Chubsucker	*Erimyzon oblongus*
Red-cockaded Woodpecker	*Picoides borealis*	Orangebelly Darter	*Etheostoma radiosum*
Scarlet Tanager	*Piranga olivacea*	Redfin Darter	*Etheostoma whipplei*
White-tailed Deer	*Odocoileus virginianus*	Northern Studfish	*Fundulus catenatus*
Aquatic MIS–17		Northern Hog Sucker	*Hypentelium nigricans*
Pond, Lake and Waterhole MIS		Green Sunfish	*Lepomis cyanellus*
		Longear Sunfish	*Lepomis megalotis*
Bluegill	*Lepomis macrochirus*	Striped Shiner	*Luxilus chrysocephalus*
Largemouth Bass	*Micropterus salmoides*	Smallmouth Bass	*Micropterus dolomieu*
Redear Sunfish	*Lepomis microlophus*	Johnny Darter [1]	*Etheostoma nigrum*
		Channel Darter [1]	*Percina copelandi*

[1] Only within the range of Leopard Darters.

Terrestrial MIS

In this report, terrestrial MIS and riparian and aquatic MIS are divided into 2 sections. The following is the summary of the terrestrial MIS with their SVE scores for 2010. All species were rated Fair in 2005 and all species remain rated Fair in 2010. The SVE needs to be repeated to see the progression of the species' scores. With the exception of the Pileated Woodpecker and the Eastern Wild Turkey, which remained the same, scores for terrestrial MIS declined slightly. A discussion of the 7 terrestrial MIS follows.

Terrestrial MIS Comparison of 2005 and 2010 SVE Scores and Ranks

Common Name	*Scientific Name*	2005 SVE Score	2010 SVE Score
Management Indicator Species*			
Eastern Wild Turkey	***Meleagris gallapavo***	**2.25 - Fair**	**2.25 - Fair**
Northern Bobwhite	***Colinus virginianus***	**2.50 - Fair**	**2.09 - Fair**
Pileated Woodpecker	***Dryocopus pileatus***	**2.37 - Fair**	**2.37 - Fair**
Prairie Warbler	***Dendroica discolor***	**2.50 - Fair**	**2.15 - Fair**
Scarlet Tanager	***Piranga olivacea***	**2.28 - Fair**	**2.24 - Fair**
White-tailed deer	***Odocoileus virginianus***	**2.21 - Fair**	**2.19 - Fair**

***Red-cockaded Woodpecker is reported with Threatened and Endangered Species**

MIS Species for the Ouachita NF

Common Name	Scientific Name	Common Name	Scientific Name
Terrestrial MIS - 7		***Stream and River MIS - 14***	
Eastern Wild Turkey	***Meleagris gallapavo***	**Yellow bullhead***	***Ameiurus natalis***
Northern Bobwhite (Quail)	***Colinus virginianus***	**Pirate perch***	***Aphredoderus sayanus***
Pileated Woodpecker	***Dendroica discolor***	**Central stoneroller***	***Campostoma anomalum***
Prairie Warbler	***Dryocopus pileatus***	**Creek chubsucker***	***Erimyzon oblongus***
Red-cockaded Woodpecker	***Picoides borealis***	**Orangebelly darter***	***Etheostoma radiosum***
Scarlet Tanager	***Piranga olivacea***	**Redfin darter***	***Etheostoma whipplei***
White-tailed deer	***Odocoileus virginianus***	**Northern studfish***	***Fundulus catenatus***
Aquatic MIS -17		**Northern hog sucker***	***Hypentelium nigricans***
Pond, Lake and Waterhole MIS - 3		**Green sunfish***	***Lepomis cyanellus***
		Longear sunfish*	***Lepomis megalotis***
Bluegill	***Lepomis macrochirus***	**Striped shiner***	***Luxilus chrysocephalus***
Largemouth bass	***Micropterus salmoides***	**Smallmouth bass***	***Micropterus dolomieu***
Redear sunfish	***Lepomis microlophus***	**Johnny darter [1]**	***Etheostoma nigrum***
		Channel darter [1]	***Percina copelandi***

*These fish species are monitored as a part of the Basin Area Stream Survey, which occurs roughly every 5 years, while pond and lake species (bluegill, largemouth bass and redear sunfish) are monitored annually.
[1]Only within the range of leopard darters.

Following is a summary of the terrestrial MIS with their SVE scores for 2010. All species were rated Fair in 2005 and all species remain rated Fair in 2010. The SVE needs to be repeated to see the progression of the species' scores. With the exception of the Pileated Woodpecker and the Eastern Wild Turkey, which remained the same, scores for terrestrial MIS declined slightly. A discussion of the 7 terrestrial MIS follows.

Terrestrial MIS Comparison of SVE Scores and Ranks

Common Name	*Scientific Name*	SVE Score	
Management Indicator Species*		**2005**	**2010**
Eastern Wild Turkey	***Meleagris gallopavo***	**2.25 Fair**	**2.25 Fair**
Northern Bobwhite (Quail)	***Colinus virginianus***	**2.5 Fair**	**2.09 Fair**
Pileated Woodpecker	***Dryocopus pileatus***	**2.37 Fair**	**2.37 Fair**
Prairie Warbler	***Dendroica discolor***	**2.5 Fair**	**2.15 Fair**
Scarlet Tanager	***Pirange olivacea***	**2.28 Fair**	**2.24 Fair**
White-tailed Deer	***Odocoileus virginianus***	**2.21 Fair**	**2.19 Fair**

*Red-cockaded Woodpecker is reported with Proposed, Threatened and Endangered Species Habitat

Habitat Capability Modeling for Terrestrial MIS

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Specific monitoring for native and desired non-native wildlife species is conducted as well as the periodic Terrestrial Habitat Monitoring. Modeling habitat capability using the Computerized Project Analysis and Tracking System (CompPATS) wildlife model and vegetation data from Field Sampled Vegetation (FSVeg) is a tool to evaluate and estimate acres of suitable habitat to sustain healthy populations of native and desired non-native wildlife species on the Ouachita NF. Management Indicator species are listed below, along with their modeled habitat capability in acres. Estimated suitable habitat acres for MIS are shown for 2005-2014, but due to lack pf personnel, the estimated current habitat capability for 2015 was not available. Habitat capability was calculated for 2016 and is useful to compare to the Projected Desired Habitat.

Habitat Capability, Modeled by FY, ONF

Estimated Modeled Habitat Capability in Acres														***Projected*** **Desired Habitat (Acres)**
Terrestrial MIS	**2005**	**2015**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2015**
Eastern Wild Turkey	18,461	9,177	17,601	18,316	18,370	16,204	14,610	14,736	14,643	14,727	14,809	Not Available	14,734	9,177
Northern Bobwhite (Quail)	65,002	101,748	62,571	69,349	74,223	68,888	76,690	71,468	67,296	63,004	65,480	Not Available	57,628	101,748
Pileated Woodpecker	17,842	11,265	17,371	14,647	15,555	13,628	11,580	12,814	12,731	12,597	13,066	Not Available	14,064	11,265
Prairie Warbler	90,313	112,590	85,691	93,830	87,788	71,582	75,531	64,686	65,411	66,126	58,457	Not Available	53,232	112,590
Scarlet Tanager	90,583	69,500	86,455	85,046	84,040	73,136	66,744	66,743	66,811	66,573	68,014	Not Available	68,649	69,500
White-tailed Deer	58,395	38,105	50,840	51,898	50,325	42,442	41,775	40,223	37,814	38,415	38,017	Not Available	37,883	38,105

Forest-wide habitat capability modeling (2016) indicates that 2 terrestrial MIS (Eastern Wild Turkey and Pileated Woodpecker) have passed the projected desired habitat capability for 2015; however, the remaining 5 species have not attained the projected desired habitat acres. Habitat for such early successional species as Northern Bobwhite fluctuated some in 2012 and 2013 from the previous years; improved slightly in 2014 and dropped in 2016; but is still far below the 2015 Projected Desired Habitat Capability. Habitat for such late successional species as Pileated Woodpecker remains above levels projected for 2015. Habitat capability for Prairie Warbler has been declining since 2007, and although it has appeared to be stable with some increase since 2010, it continues to be well below the habitat capability estimated in the Forest Plan. Habitat capability for Scarlet Tanager has declined overall to below the 2015 projected level, but it has remained fairly stable for the last 5 years and is near the 2015 Projected Desired Habitat Capability. White-tailed Deer habitat capability has been fairly stable for the past 5 years, although it is just below the 2015 Projected Desired Habitat Condition. Most of these habitat estimates lend weight to the finding that the Ouachita NF is trending toward becoming a late seral forest, in need of additional regeneration, thinning, prescribed burning, and other habitat improvement to meet desired conditions.

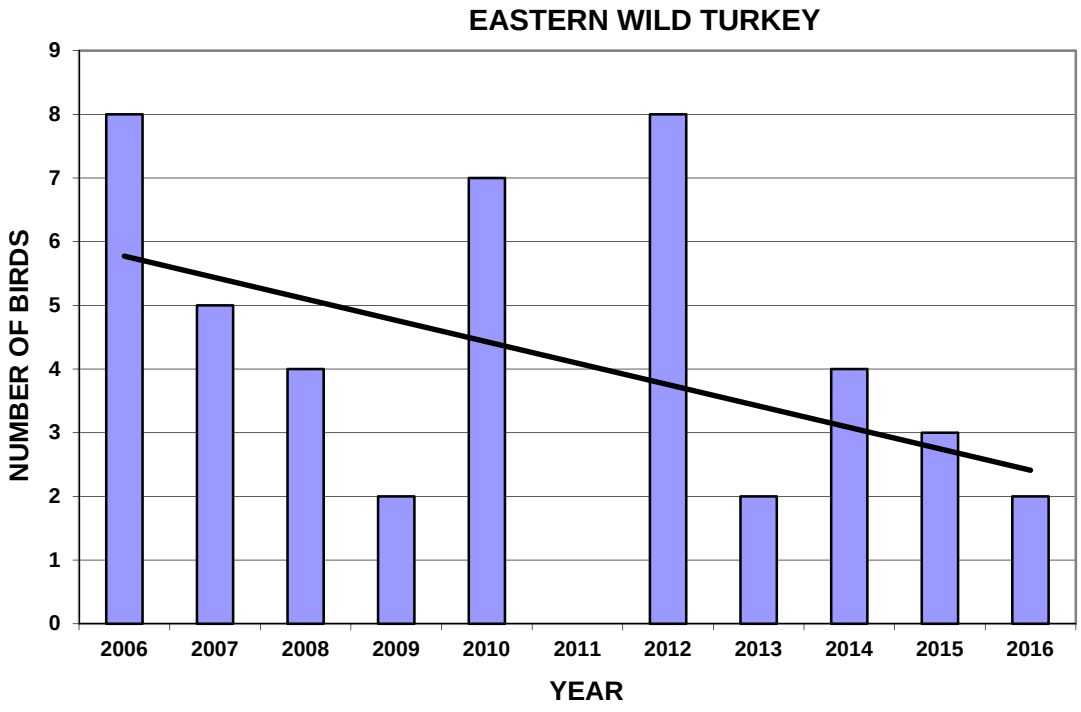
Eastern Wild Turkey *(Meleagris gallopavo)*

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

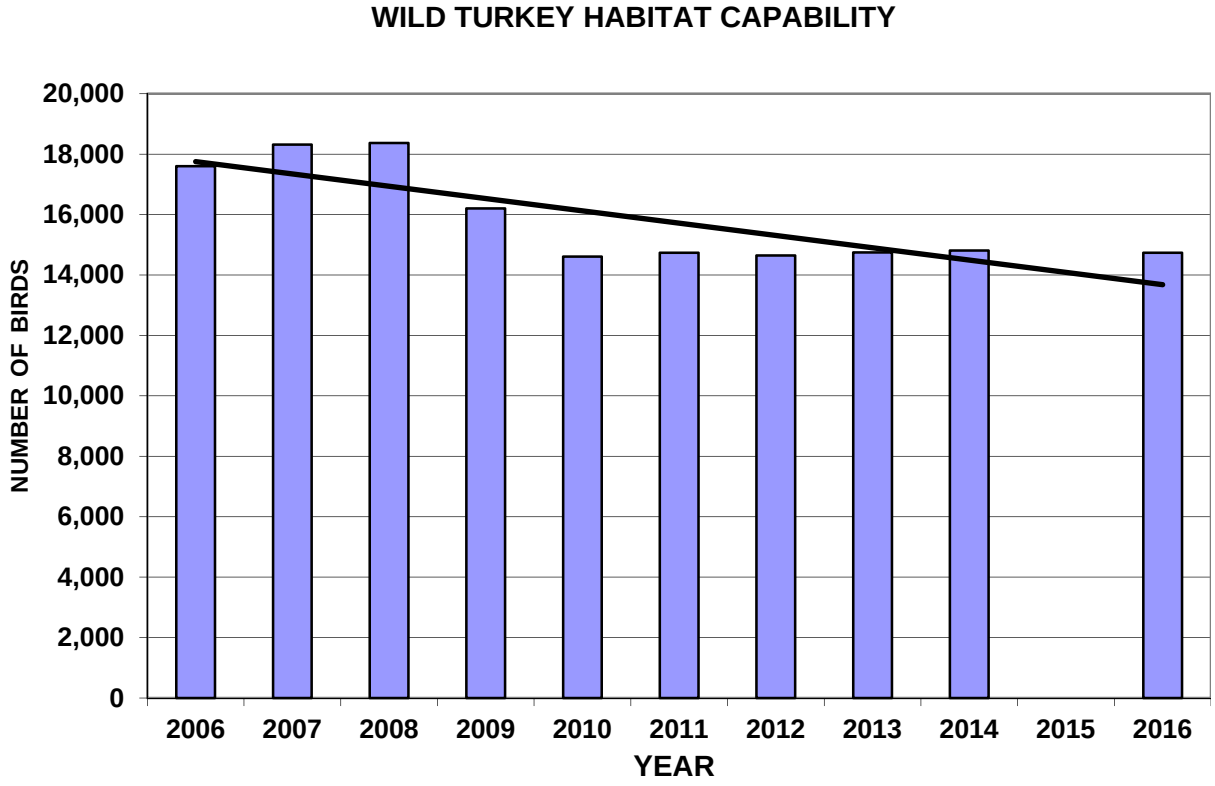
The Eastern Wild Turkey is a management indicator species selected to indicate the effects of management on meeting public hunting demand (USDA Forest Service 2005b, p165.)

Data Sources: Sources of data include turkey poult surveys, spring turkey harvest data, habitat capability modeling using CompPATS and Landbird point survey data. In the 2005 Forest Plan, the minimum population objective is 3.3 turkeys per square mile (9,177 turkeys Forest-wide) after 10 years and 3.9 per square mile at 50 years (USDA Forest Service 2005b, p166.)

Eastern Wild Turkey
Source: USFS



Habitat capability was not calculated for 2015. For 2016, it was estimated at 14,734 acres. This is compared to 14,809 in 2014; 14,748 in 2013; 14,643 in 2012; and an estimated 14,736 in 2011, 14,610 in 2010, 16,204 in 2009, 18,370 in 2008, and 18,316 in 2007, indicating a downward trend in habitat capability for the years 2006 to 2009 then stabilizing through 2016. Overall, the Forest should have habitat to support numbers exceeding the minimum population objective of 3.3 turkeys per square mile (9,177 turkeys) for the first period (10 years) of the Forest Plan.



Interpretation of Trends for Eastern Wild Turkey: A stabilized trend is suggested for the turkey population on the Forest based on habitat capability modeling. Although there was a drop in the Landbird Points data, spring turkey harvest data for 2015 and 2016 indicate a small increase in the number of turkey Forest-wide. Still, habitat capability remains above the level projected in the Forest Plan. The sustained high levels of habitat capability may indicate that the reductions in poults per hen and birds detected on the Landbird Points are due to factors other than habitat suitability or availability.

Implications for Management: Turkey poult production and birds detected on Landbird Points and habitat capability were up in 2014 compared to 2016; however, harvest numbers were up in 2015 and 2016. This may possibly be due to the change in management philosophy by the Arkansas Game and Fish Commission. Insufficient data exist to suggest that Eastern Wild Turkey may be in danger of losing population viability or falling below desired population levels. The Arkansas Game and Fish Commission has shortened the spring season and eliminated the fall season to stimulate more positive responses. In addition to harvest levels, weather conditions and predation may be having a negative impact on the turkey. Data are contradictory, with habitat projections and poult production reflecting a slightly negative, but stabilized, trend in the past few years, and harvest and Landbird Points down from 2006 levels in most years. Due to conflicting indicators, more research should be conducted to determine if additional management changes are warranted. Research across the South has shown that prescribed fire treatments, including growing season burns, improve turkey habitat by opening up dense forest, reducing shrub and brush, and improving nesting and brood rearing habitat. Areas that were not burned for more than 2 years were almost devoid of turkey hens (Cox and Widener 2008). No management changes are warranted at this time. In addition, research is currently ongoing on the Forest to look at habitat preferences of the Eastern Wild Turkey.

Northern Bobwhite (*Colinus virginianus*)

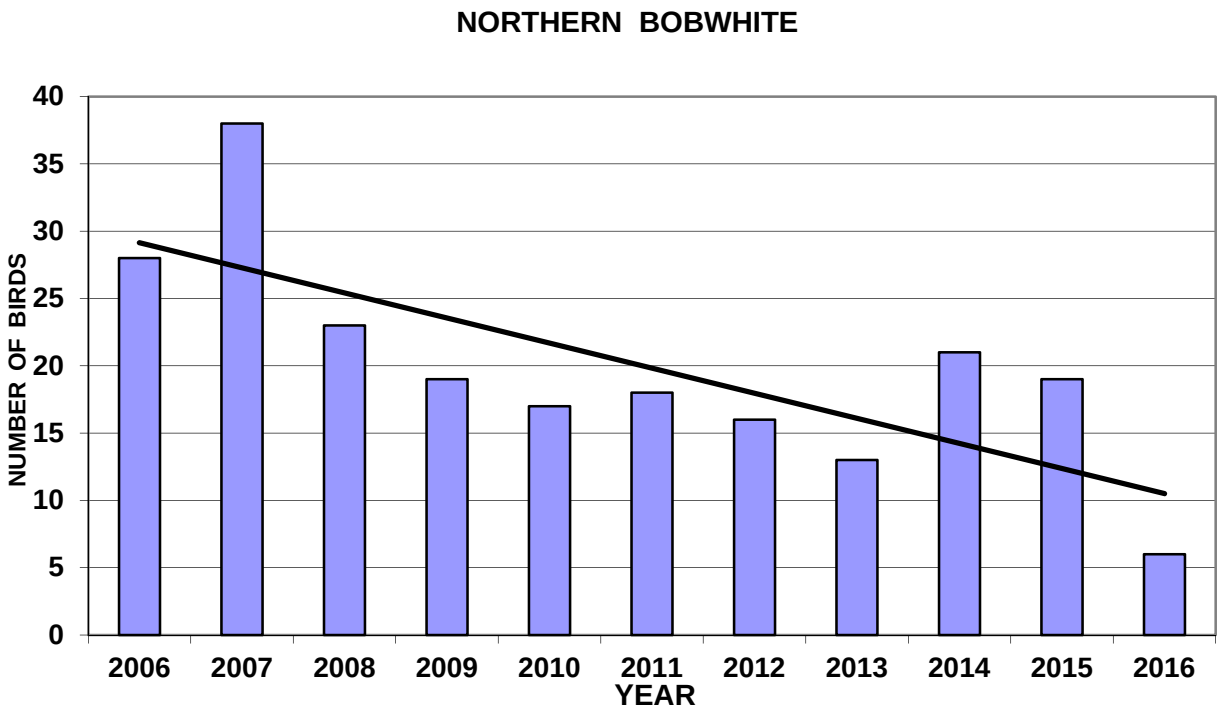
For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Northern Bobwhite
Source: USFS

The Northern Bobwhite (Quail) is a management indicator species selected to indicate the effects of management on meeting public hunting demand and the effects of management on the pine-oak woodland and pine bluestem communities (USDA Forest Service 2005a, p165).

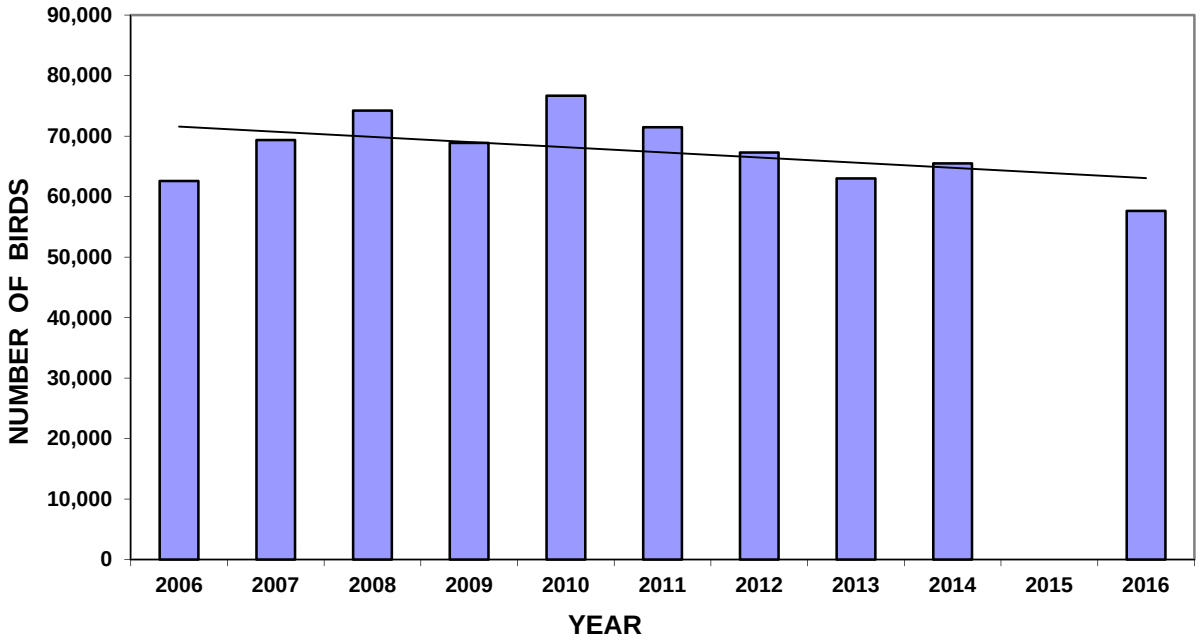
Data Sources: Data sources and monitoring techniques for this species include Northern Bobwhite call counts (Arkansas Game and Fish Commission and Oklahoma Department of Wildlife Conservation); the CompPATS Habitat; Capability Model and the Ouachita NF Landbird Points monitoring data collected from 1997 – 2014. In the Forest Plan EIS, the population objective for the Northern Bobwhite is an average of 36.6 birds per square mile (USDA Forest Service 2005a, p. 166).

Population Trends: Since 1997, the Ouachita NF has been conducting bird surveys on over 300 Landbird Points. Northern Bobwhite data indicate a downward, but leveling, trend in birds detected over this 18-year period. Since 2006, a 10-year declining trend has continued mirroring this species range-wide population trends. Although 2015 counts were higher than the previous year and about equal to the preceding 3 years (2010- 2012), 2016 indicated a significant drop. This may have been caused by the significant amount of rainfall or other influences.



Estimated habitat capability for the Northern Bobwhite has been relatively stable since 2006, with a slight decrease after 2008. However, it is still far from reaching the projected 2015 desired Forest-wide habitat capability of 101,748 based on the Forest Plan EIS. One major factor is that the Forest has not met the objective of establishing 5,500 acres of early seral habitat per year since the Forest Plan went into effect. The habitat capability trend has a quite low statistical significance. No data were available for 2015 and habitat capability was not calculated. For 2016, available habitat was capable of supporting 57,628 Northern Bobwhite Quail.

NORTHERN BOBWHITE HABITAT CAPABILITY



Interpretation of Trends for Northern Bobwhite: Regional declining population trends for the Ozark-Ouachita Plateau region are reported by most game and fish agencies or land managers. Regional and range-wide declines are primarily attributed to the loss of habitat on private and agricultural lands and changes in agricultural practices. The Ouachita NF has pursued aggressive prescribed fire and thinning programs that are providing habitat improvements, and it is anticipated that these management actions will soon act positively to overcome the downward trends.

Pileated Woodpecker (*Dryocopus pileatus)*

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The Pileated Woodpecker is an MIS for the Ouachita NF, selected to indicate the effects of management on snags and snag-dependent species (USDA Forest Service 2005a, p. 166). This species prefers dense, mature hardwood and hardwood-pine forest types. It is a primary excavator of cavities important to obligate secondary cavity nesters and is a key indicator for the retention of a complete community of cavity nesting species.

Implications for Management: Based on reports from 2006-2015, the Pileated Woodpecker and its habitat appear to be secure within the Ouachita NF. There are no indications of a need to alter management direction.

Pileated Woodpecker
Source: www.enature.com

Prairie Warbler *(Dendroica discolor)*

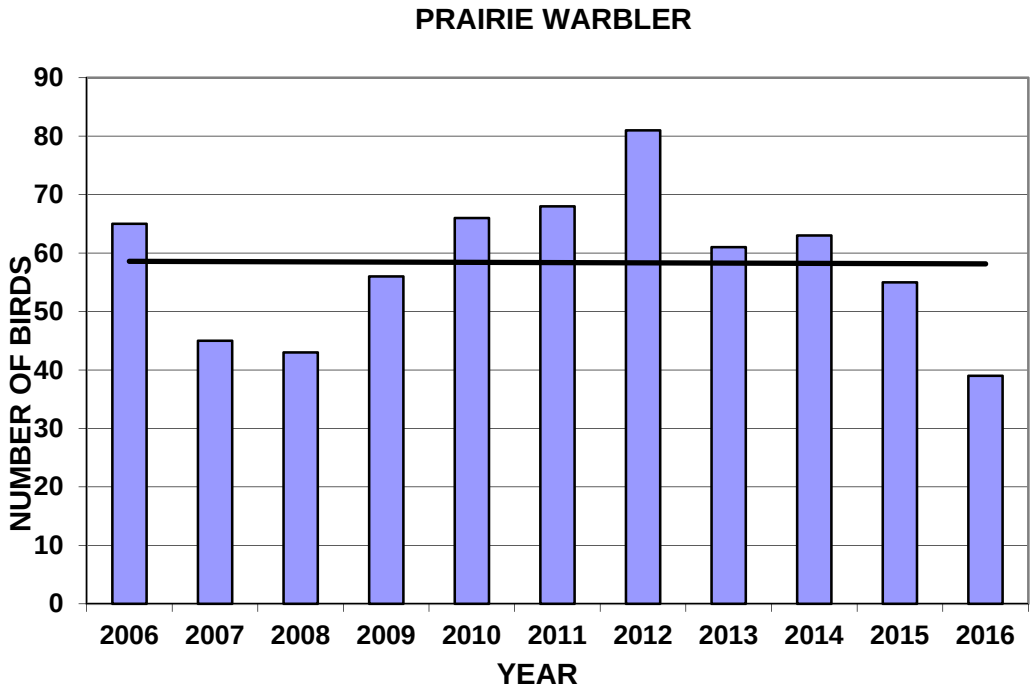
For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The Prairie Warbler is an MIS selected to indicate the effects of management on the early successional component of forest communities. As a neo-tropical migrant, the Prairie Warbler is an international species of concern. This species uses early successional habitats, such as regenerating old fields, pastures, and young or very open forest stands. The vegetation selected may be deciduous, conifer, or mixed types. Habitats with scattered saplings, scrubby thickets, cut-over and/or burned-over woods, woodland margins, open brushy lands, mixed pine and hardwood, and scrub oak woodlands are most often selected.

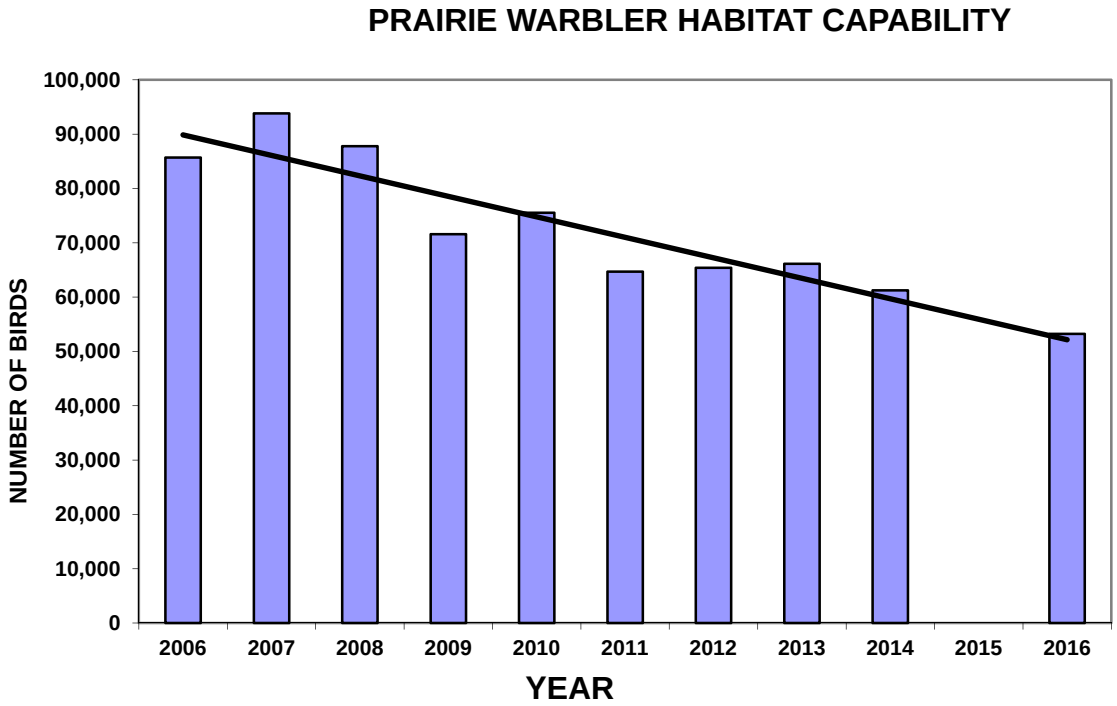
Prairie Warbler
Source: www.enature.com

Data Sources: Ouachita NF Landbird Points data (1997–2016) and the Habitat Capability Model data are sources for evaluating Prairie Warbler population trends.

Population Trends: Based on the data available, the Prairie Warbler shows a slight downward (but not statistically significant) trend since FY 2006 with a drop in 2011 where it remained through 2014. In 2016, both the habitat and the Land Bird Monitoring indicates another drop that is expected since the amount of early seral habitat is limited. Throughout the Prairie Warbler range, a downward trend is indicated.



Habitat capability for the Prairie Warbler on the ONF continues to show a downward trend (which is consistent with range-wide trends), with some hint of having plateaued in the period 2011- 2014. Habitat capability was not calculated for 2015, and was the lowest calculated since 2008 in 2016.



Interpretation of Trends for Prairie Warbler: The Prairie Warbler has a recently declining population on the Forest, based on Landbird Points data and habitat capability (these data were unavailable for 2015.) Under Forest Plan implementation, early seral stage habitat should continue to increase and then stabilize at approximately 50,000 to 60,000 acres after ten years (USDA Forest Service 2005a, p175); however, just the opposite is happening, with less than 1,000 acres regenerated in 2016 (less than 20% of the Forest Plan objective of 5,500 acres). Data point to a declining population trend for the Prairie Warbler on the Ouachita NF and survey-wide for the long-term, with such decline considered to be related to the decline in acres of early seral stage habitat available.

Implications for Management: The Prairie Warbler has a declining population trend within the Ouachita NF and throughout its overall range; however, population viability on the Ouachita NF should not be threatened. The population decline has been exacerbated by the fact that the quantity of early seral habitat expected to be produced annually (5,500 acres), largely by seed tree and shelterwood cutting, has not yet been realized. Meanwhile, increases in thinning and prescribed fire in the pine and pine-hardwood types, especially associated with approximately 200,000 acres of shortleaf-bluestem ecosystem restoration, will benefit Prairie Warbler populations if these management activities are implemented to their full extent.

Red-cockaded Woodpecker (*Picoides borealis*)

For additional information, contact Warren Montague rmontague@fs.fed.us or Robert Bastarache at rbastarache@fs.fed.us

The Red-cockaded Woodpecker (RCW) is a management indicator species for the Ouachita NF because it has Federal endangered species status. It was selected to indicate the effects of management on recovery of this species and to help indicate effects of management on shortleaf pine-bluestem woodland community (USDA Forest Service 2005b, p166.) The RCW is discussed in more detail previously in the 'Terrestrial Proposed, Endangered, and Threatened Species Habitat' Section (page 76) of this report; however data are not as complete as they have been in the past due to fewer personnel focused on this species.

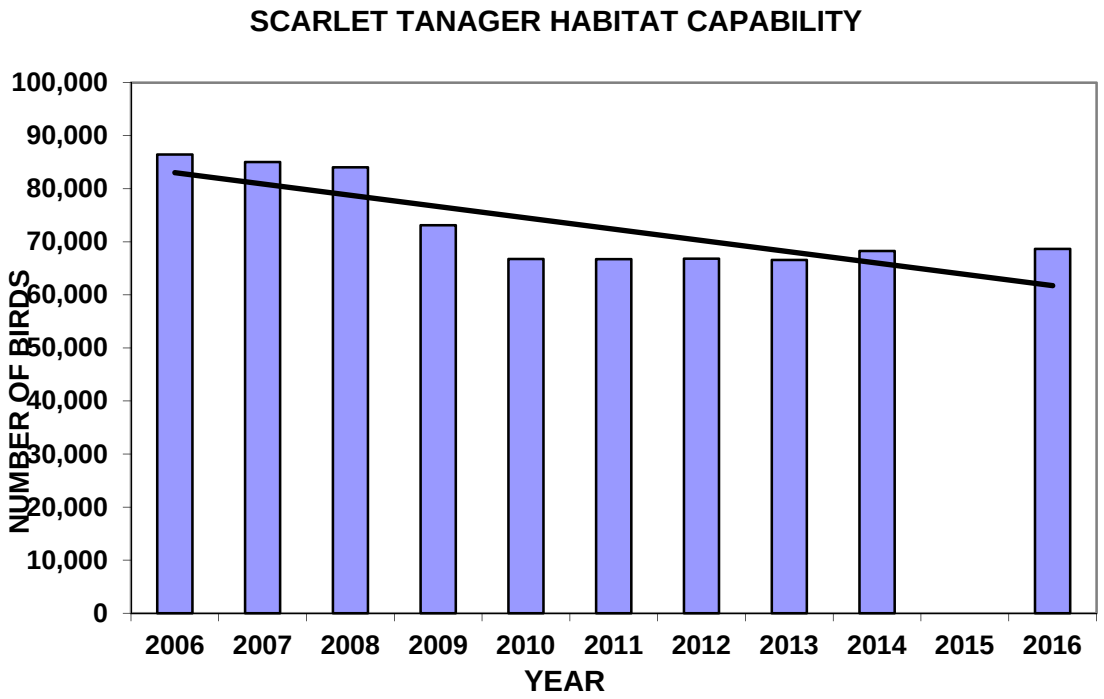
Scarlet Tanager *(Piranga olivacea)*

The Scarlet Tanager is an MIS for the Ouachita NF, selected to help indicate the effects of management on mature forest communities. This species favors mature hardwood and hardwood-pine, and is less numerous in mature mixed pine-hardwood and pine habitat types. It is relatively common in all of these habitats in the Ouachita Mountains.

Scarlet Tanager
Source: www.enature.com

Data Sources: The usual Ouachita NF Landbird Points data and habitat capability predictions using CompPATS wildlife model, and Field Sampled Vegetation (FSVeg) data were not available in 2015 to make a population trend assessment.

Population Trends: The Landbird Points data collected from FY 2006-2016 suggest an overall decreasing trend for the Scarlet Tanager; however 2016 showed the highest number of tanagers since 2010. The population is stable, and the trend is not statistically significant and could reflect natural variability.



Similar to Landbird Points data, Ouachita NF habitat capability data point to a (statistically significant) downward trend for Scarlet Tanager since 2006, although habitat capability has been relatively stable for the period 2010 to 2016. Habitat capability was not calculated for 2015.

Interpretation of Trends for the Scarlet Tanager: Recent data show a stable trend on the Ouachita NF and the Ozark-Ouachita Plateau where mature hardwood and mixed types are represented. On the Ouachita NF, there are over 200,000 acres of hardwood and hardwood/pine forest types greater than 41 years old. The Scarlet Tanager and its habitat are secure within the Ouachita NF, and the continued long-term viability of this species is not in question.

Implications for Management: The Scarlet Tanager may be decreasing gradually within the Ouachita NF and the Ozark and Ouachita Plateau but appears secure within its overall range. The viability of this species is not in question; however, it will be retained as an indicator species and monitoring will continue.

White-tailed Deer *(Odocoileus virginianus)*

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

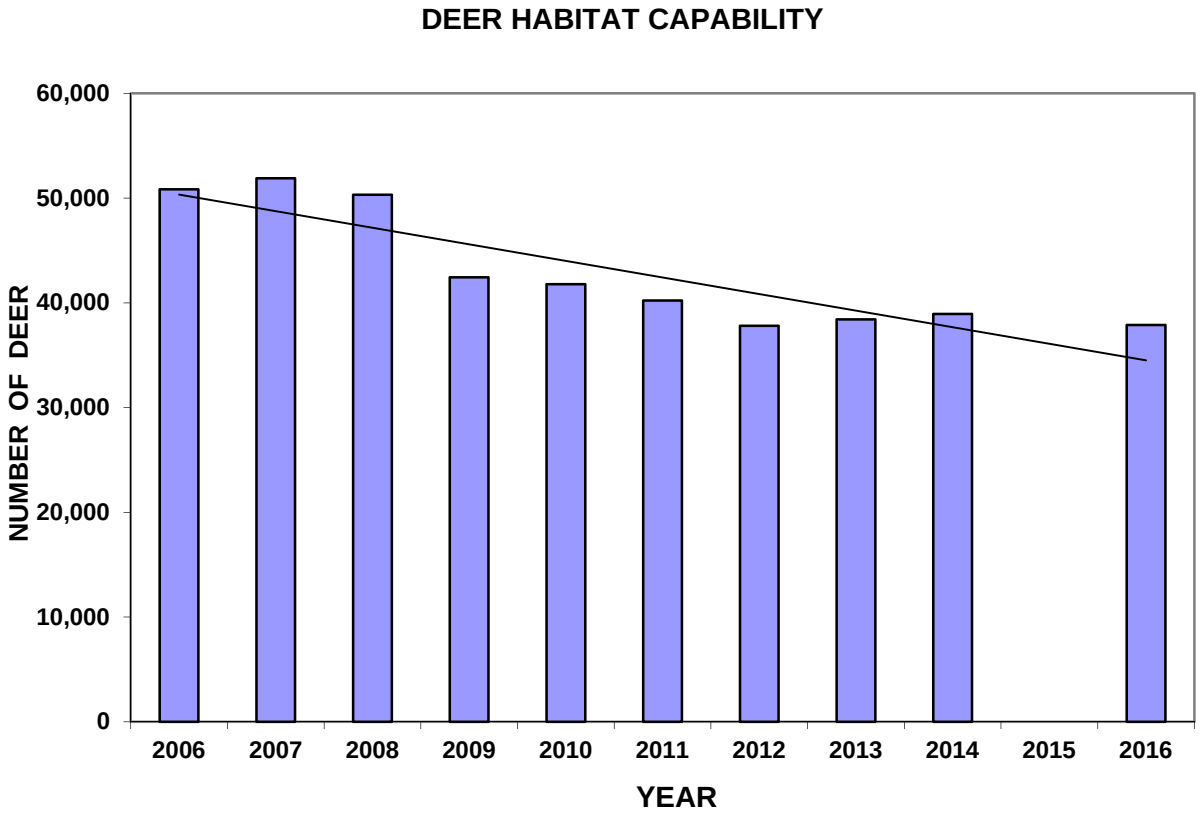
The white-tailed deer is an MIS that was selected to help indicate the effects of management on meeting the public hunting demand (USDA Forest Service 2005, p165). In the Forest Plan, the desired habitat condition is to sustain healthy populations of native and desired non-native wildlife and fish species.

White-tailed Deer
Source: www.enature.com

Data sources: Data sources and monitoring techniques for this species include deer spotlight survey counts (Urbston *et al.* 1987), harvest and population trend data from the AGFC and ODWC, CompPATS deer habitat Capability model, and acreage of early successional habitat created by year. Due to lack of available funds and manpower, the deer spotlight survey counts will be discontinued and additional coordination with AGFC and ODWC will be used to obtain harvest data for deer.

Deer Population Trends: The estimated habitat capability for deer is slightly below the range of the desired habitat capability of 38,105 acres for 2015. Habitat carrying capacity is calculated using acres within the Ouachita NF. Habitat carrying capacity is positively influenced by the number of acres of prescribed fire accomplished and early seral habitat created, including regeneration, thinning, mid-story removal, wildlife stand improvement, wildlife openings, and site preparation, but negatively influenced by timber stand improvement (short-term).

For deer, the CompPATS habitat capability model places a greater value on early seral stage habitat and gives lesser value to habitat created by thinning and prescribed fire. In contrast to the declines in even-age regeneration cutting and site preparation, the acres of thinning and prescribed fire have increased over the last 5 years. The Final Environmental Impact Statement for the Forest Plan (USDA FS 2005) indicated in Table 3.59 (p166), a desired terrestrial habitat capability to support an average of 13.7 deer per square mile within the Ouachita NF after 10 years. This was calculated on a land base of 1,789,320 acres (2,796 square miles) for a habitat capability that would support 38,303 deer. The habitat capability as estimated by the CompPATS wildlife model exceeds the Forest Plan projections for every year in the period 2006 – 2014. CompPATS was not calculated for 2015. For 2016, the Forest Plan Projected 38,303 deer and the CompPATS model indicates 37,814 individuals, a difference of less than 500 individuals and only 1 percent less than the Forest Plan calculation.



Interpretation of Trends for White-tailed Deer: The decreasing habitat capability for the past few years as estimated by the CompPATS wildlife model is related to fewer acres than anticipated in grass/forb habitat (forest types ages 0-10 years) preferred by deer. Although acres of created early successional habitat have not matched the desired levels, deer harvest shows a slight increase in the last few years.

Implications for Management: Deer are widespread, abundant, and their habitat capability is just below the Forest Plan projection. There are no indications of a need for adjustment in current management practices.

Terrestrial MIS Summary

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The 7 terrestrial management indicator species show poor habitat conditions and capability for 3 species, Eastern Wild Turkey, Northern Bobwhite, and Prairie Warbler, but 4 species with habitat conditions and capability that are stable or increasing. The following table displays the expected population trends for all 7 terrestrial species, apparent population trends, risk for conservation of species, and management changes needed.

All 3 of the declining species show region-wide declines, not just declines within Arkansas and Oklahoma. Forest Plan implementation to produce 5,500 acres of early seral habitat per year is needed to increase early seral habitat for the declining species through shelterwood and seedtree silvicultural methods combined with continued thinning and burning in pine and pine-oak woodlands.

Status of Terrestrial Management Indicator Species, ONF

Species	Expected Population Trends	Apparent Population Trends	Risk for Conservation of Species	Management Changes Needed
Eastern Wild Turkey (*Meleagris gallopavo*)	**Stable**	**Decreasing**	**None**	**Increase early seral habitat development**
Northern Bobwhite (*Colinus virginianus*)	**Increase**	**Decreasing**	**None**	**Increase prescribed burning, thinning and early seral habitat development**
Pileated Woodpecker (*Dryocopus pileatus)*	**Stable**	**Stable**	**None**	**None**
Prairie Warbler *(Dendroica discolor)*	**Increase**	**Decreasing**	**None**	**Increase early seral habitat development**
Red-cockaded Woodpecker (*Picoides borealis*)	**Increasing**	**Increasing**	**None**	**None**
Scarlet Tanager *(Piranga olivacea)*	**Stable**	**Stable**	**None**	**None**
White-tailed Deer (Odocoileus virginianus)	**Stable**	**Increasing**	**None**	**None**

In this report, terrestrial MIS and aquatic MIS are presented separately. Discussions about aquatic management indicator species (MIS) begin on page 89.

R8 Sensitive Species and Terrestrial Species of Viability Concern

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The comprehensive list of "species of viability concern" pertaining to the Forest is a fine-filter list of species that was compiled from Arkansas and Oklahoma species specialists' recommendations from all species of local concern that may occur or are known to occur on the Forest. These species may not have Global viability concerns, but do have local viability concerns (for example: edge of range, local rarity, Forest population status).

The R8 Regional Forester's Sensitive species list was compiled by the Forest species' specialists according to their Global ranking (G1-G3) and/or Forest viability concerns. Forest Service sensitive species are defined as: "Those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by: a) Significant current or predicted downward trends in population numbers or density, or b) Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution." (Forest Service Manual 2670.5) There are 67 species on the R8 Sensitive Species list that are known to occur on the Ouachita NF. Of those, 44 are terrestrial species.

Species are categorized as being "sensitive" due to their endemic or restricted ranges, and/or current or predicted downward trends in population numbers and/or available habitat, which raises concern about long-term viability. The following species on the Regional Forester's Sensitive Species list are regularly monitored: Bald Eagle, Caddo Mountain salamander, Rich Mountain slit-mouth snail, and certain sensitive bats. In late 2011, Region 8 began the process of revising the R8 Regional Forester's Sensitive species list and it should be completed in 2017.

Bald Eagle (*Haliaeetus leucocephalus*)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Bald Eagles were removed from the endangered species list in June 2007 because their populations recovered sufficiently. When the Bald Eagle was delisted, the Fish and Wildlife Service prepared National Management Guidelines that the Forest Service implements. Other federal laws, including the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act still apply to this species. It is currently listed as a Regional Forester's Sensitive Species. The 2010 SVE score was lower than the 2005 score but still ranks in the "Good" category.

Bald Eagle
Source: www.enature.com

Caddo Mountain Salamander *(Plethedon caddoensis)*

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Since 2007, studies have been conducted to identify and define species and the species boundaries of the Caddo, Rich, and Fourche Mountain salamanders, using modern DNA sequence techniques. The Oklahoma Ranger District surveyed 100 acres for Rich Mountain salamanders in 2016 and found 7. The average for the previous 5 years was 3. One additional Rich Mountain salamander was found during surveys for the Rich Mountain slit-mouthed snail.

Caddo Mountain Salamander

Source: Dr. Stan Trauth

Surveys were conducted in FY 2009 and 2010 for the Caddo Mountain Salamander. The 2005 SVE score for this species declined from a "Good" to a "Fair" ranking in 2010. The Caddo Mountain Salamander is composed of 4 highly divergent, geographically distinct lineages. The distributions of lineages abut each other primarily along an east-west axis, but did not appear to be separated by any physical or environmental barrier. Based on the observed phylogeographic structure, it was hypothesized that historic climatic changes resulted in range contraction toward streamside talus slopes that serve as retreats thereby isolating populations in different river drainages. In support of this hypothesis that connectivity of talus habitats would be important in determining patterns of inter-population gene flow, it was found that a significant amount of genetic variation was partitioned among river drainage systems; although many cases were found where individuals had crossed drainage boundaries for short distances in high-elevation headwater regions (Burbrink *et. al.* 2009).

Rich Mountain Slit-mouth Snail *(Stenotrema pilsbryi)*

For additional information, contact Dan Benefield at dbenefield@fs.fed.us

In 2016, no Rich Mountain slit-mouth snails were found during 8 surveys at 8 sites in April and May in Oklahoma. All sites are existing sites that are monitored on a 3-year cycle. Three live Rich Mountain slit-mouth snails were found during 30-minute searches of 5 sites in 2015. The 2010 viability analysis ranked the Rich Mountain slit-mouth snail in the "Good" category, an improvement from the 2005 rank of "Fair." However, with no sightings in either 2012 or 2013, this species will require continued monitoring. No additional SVE analysis was completed in 2015 or 2016.

Year of Surveys	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
# Rich Mountain Slit-mouth Snails	8	15	16	0	7	5	0	0	8	3	0
# 30-Minute Surveys	5	6	9	6	8	8	5	8	9	5	8

Sensitive Bats (Eastern small-footed bat and Southeastern Myotis)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The Ouachita NF initiated a bat acoustic survey protocol in 2009 to monitor bat population trends and assess the impacts of White Nose Syndrome (WNS) on the summer distribution of bats. During 14 survey nights in the first year the Ouachita NF captured calls from 7 bat species. *Myotis leibii* (Eastern small-footed bat), an R8 sensitive species rarely found to occur on the Ouachita NF, was identified during 4 of the survey nights on two separate survey routes: however this bat was not identified in 2016. The SVE scores for both bat species remain in the "Good" category. No additional SVE analysis was completed in 2015 or 2016.

Eastern Small-footed Bat
Source: www.enature.com

Other Bat Monitoring

The ONF, assisted by Roger Perry from the Southern Research Station, accomplished bat monitoring in 10 cave and mine locations in 2016. Swabs for WNS at 2 locations (Spillway Mine and Sleeping Child Mine) both came back negative. Monitoring occurred on 2 separate occasions at most sites and is shown with separate counts in the following:

Bat Monitoring in Mines, FY 2016, assisted by Southern Research Station, ONF				
	Northern Long-eared Bat	**Tri-color Bat**	**Southeastern Myotis**	**Big Brown Bat**
Dec 2015 & Feb 2016	***Myotis septentrionalis***	***Perimyotis subflavus***	***Myotis austroriparius***	***Eptesicus fuscus***
Spillway Mine*		19	1 was found in 2015, but none were found in 2016.	1 was found in 2015, but none were found in 2016.
Dec 2015 & Feb 2016		18		
Sleeping Child Mine		17		
Dec 2015 & Feb 2016		18		
Charlton Rec. Mine	2	26		
Dec 2015 & Feb 2016	1	7		
Monte Cristo Mine		19		
Dec 2015 & Feb 2016		8		
Twin Mines	Not surveyed in 2016			
Silver Mine**		15		
Dec 2015				
Texas Mine**		13		
Dec 2015				
Big Ear Mine**		3		
Camp Wilder Mine**		5		
Feb 2016				
Chalk Mine**	5	130	36	
Feb 2016				
2016 Totals	8	298	36	0

***Bats tested positive for WNS at this site in 2015.**
**** Surveyed in 2016, but not 2015**

R8 Sensitive Species and Other Species of Viability Concern Summary

The Bald Eagle, Caddo Mountain salamander, Rich Mountain slit-mouth snail and sensitive bat species are monitored every year or at least periodically on the Forest, but most of the Sensitive as well as other species of viability concern are scored through the species viability evaluation (SVE) according to the health of the habitat identified as utilized by each species. Those species that are monitored regularly were discussed in some detail, while those using habitat health indicators and not direct monitoring, were ranked using SVE analysis.

The 79 sensitive species and species of viability concern are listed with the 2005 and 2010 SVE scores in the following tabulation and divided into catgories of mammals, birds, amphibians and reptiles, inverterates, and plants. The 2005 SVE scores reflected no species with a condition ranking of “Very Good” and that has improved to 3 species for 2010. In 2005, 46 species were ranked as “Good” while in 2010 only 35 ranked as “Good.” In 2005, 33 species were in “Fair” condition, which increased to 41 species in “Fair” condition for 2010. Many of these species are dependent or are associated with the early seral condition of the vegetation communities, and the early seral condition ranked “Poor” for every community in 2010. Road densities within communities remained high from 2005 to 2010, and the fire regime frequently ranked “Poor” or “Fair” for most communities. SVE analysis was not performed in 2015 or 2016, but as soon as databases are improved to the point that they will support such analysis, it will be performed.

2005 and 2010 SVE Scores for Sensitive and Other Species of Viability Concern, ONF			
Common Name	***Scientific Name***	**2005 SVE Score**	**2010 SVE Score**
RF Sensitive and Other Species of Viability Concern Species			
Mammals			
Southeastern Myotis	***Myotis austroriparius***	**3.36 - Good**	**3.4 - Good**
Eastern Small-Footed Bat	***Myotis leibii***	**3.31 - Good**	**2.56 - Good**
Plains Spotted Skunk	***Spilogale putorius interrupta***	**2.86 - Good**	**2.19 - Fair**
Birds			
Bald Eagle	***Haliaeetus leucocephalus***	**2.75 - Good**	**2.65 - Good**
Prothonotary Warbler	***Protonotaria citrea***	**2.88 - Good**	**2.94 - Good**
Red-headed Woodpecker	***Melanerpes erythrocephalus***	**2.82 - Good**	**2.47 - Fair**
American Kestrel	***Falco sparverius***	**2.75 - Good**	**2.2 - Fair**
Chimney Swift	***Chaetura pelagica***	**2.71 - Good**	**2.66 - Good**
Worm-eating Warbler	***Helmitheros vermivorus***	**2.59 - Good**	**2.23 - Fair**
Bachman's Sparrow	***Aimophila aestivalis***	**2.59 - Good**	**2.4 - Fair**
Swainson's Warbler	***Limnothlypis swainsonii***	**2.56 - Good**	**2.75 - Good**
Yellow-throated Vireo	***Vireo flavifrons***	**2.56 - Good**	**2.78 - Good**
Painted Bunting	***Passerina ciris***	**2.56 - Good**	**2.39 - Fair**
Acadian Flycatcher	***Empidonax virescens***	**2.5 - Fair**	**2.78 - Good**
Chuck-will's-widow	***Caprimulgus carolinensis***	**2.5 - Fair**	**2.28 - Good**
Cerulean Warbler	***Dendroica cerulea***	**2.5 - Fair**	**2.63 - Good**
Orchard Oriole	***Icterus spurius***	**2.5 - Fair**	**2.3 - Fair**
Brown-headed Nuthatch	***Sitta pusilla***	**2.5 - Fair**	**2.48 - Fair**
Bewick's Wren	***Thryomanes bewickii***	**2.5 - Fair**	**1.93 - Fair**
White-eyed Vireo	***Vireo griseus***	**2.5 - Fair**	**2.11 - Fair**
Wood Thrush	***Hylocichla mustelina***	**2.5 - Fair**	**2.4 - Fair**
Kentucky Warbler	***Oporornis formosus***	**2.5 - Fair**	**2.39 - Fair**
Whip-poor-will	***Caprimulgus vociferus***	**2.48 - Fair**	**2.13 - Fair**
Hooded Warbler	***Wilsonia citrina***	**2.5 - Fair**	**2.4 - Fair**

Amphibians and Reptiles			
Razorback Musk Turtle	*Sternotherus carinatus*	3.5 - Good	3.25 - Good
Northern Crawfish Frog	*Rana areolata circulosa*	3.48 - Good	3.43 - Good
Strecker's Chorus Frog	*Pseudacris streckeri streckeri*	3.42 - Good	3.43 - Good
Many-ribbed Salamander	*Eurycea multiplicata multiplicata*	3.1 - Good	3.0 - Good
Mississippi Green Water Snake	*Nerodia cyclopion cyclopion*	3 - Good	3.0 - Good
Ringed Salamander	*Ambystoma annulatum*	2.94 - Good	2.91 - Good
Mole Salamander	*Ambystoma talpoideum*	2.86 - Good	2.38 - Fair
Ouachita Dusky Salamander	*Desmognathus brimeylorum*	2.67 - Good	3.0 - Good
Rich Mountain Salamander	*Plethodon ouachitae*	2.67 - Good	2.67 - Good
Caddo Mountain Salamander	*Plethodon caddoensis*	2.59 - Good	2.23 - Fair
Fourche Mountain Salamander	*Plethodon fourchensis*	2.59 - Good	2.23 - Fair
Sequoyah Slimy Salamander	*Plethodon sequoyah*	2.59 - Good	2.25 - Fair
Kiamichi Mountain Salamander	*Plethodon kiamichi*	2.59 - Good	2.23 - Fair
Four-toed Salamander	*Hemidactylium scutatum*	2.59 - Good	2.5 - Fair
Southern Prairie Skink	*Eumeces septentrionalis obtusirostris*	2.5 - Fair	2.09 - Fair
Southern Redback Salamander	*Plethodon serratus*	2.5 - Fair	2.23 - Fair
Bird-voiced Tree Frog	*Hyla avivoca*	2.5 - Fair	2.88 - Good
Timber Rattlesnake	*Crotalus horridus*	2.5 - Fair	2.12 - Fair
Great Plains Skink	*Eumeces obsoletus*	2.5 - Fair	2.02 - Fair
Western Diamondback Rattlesnake	*Crotalus atrox*	2.4 - Fair	2.0 - Fair
Collared Lizard	*Crotaphytus collaris*	2 - Fair	1.67 - Fair
Invertebrates			
Ouachita Slitmouth	*Stenotrema unciferum*	2.93 - Good	2.51 - Good
An Isopod	*Lirceus bicuspidatus*	2.9 - Good	3.14 - Good
Diana Fritillary	*Speyeria diana*	2.5 - Fair	1.92 - Fair
Rich Mountain Slitmouth	*Stenotrema pilsbryi*	2 - Fair	2.67 - Good
Plants			
Arkansas Meadow-Rue	*Thalictrum arkansanum*	3.5 - Good	4.00 - Very Good
Threadleaf Bladderpod	*Lesquerella angustifolia*	3.5 - Good	4.00 - Very Good
Golden Glade Cress	*Leavenworthia aurea*	3.5 - Good	4.00 - Very Good
Narrowleaf Ironweed	*Vernonia lettermannii*	3.5 - Good	3.25 - Good
A Sandgrass	*Calamovilfa arcuata*	3.5 - Good	3.25 - Good
Sand Grape	*Vitis rupestris*	3.5 - Good	3.25 - Good
Moore's Larkspur	*Delphinium newtonianum*	3.08 - Good	2.67 - Good
Ouachita Bluet	*Houstonia ouachitana*	2.67 - Good	2.71 - Good

Plants			
Bush's Poppymallow	***Callirhoe bushii***	**2.67 - Good**	**1.86 - Fair**
Wolf Spikerush	***Eleocharis wolfii***	**2.67 - Good**	**1.67 - Fair**
Butternut	***Juglans cinerea***	**2.67 - Good**	**2.71 - Good**
Rayless Crown-Beard	***Verbesina walteri***	**2.67 - Good**	**2.51 - Good**
Ozark Spiderwort	***Tradescantia ozarkana***	**2.67 - Good**	**2.71 - Good**
Small-headed Pipewort	***Eriocaulon kornickianum***	**2.67 - Good**	**1.67 - Fair**
A Corn-Salad	***Valerianella palmeri***	**2.63 - Good**	**2.42 - Fair**
Browne's Waterleaf	***Hydrophyllum brownei***	**2.58 - Good**	**2.71 - Good**
A Goldenrod	***Solidago ouachitensis***	**2.53 - Good**	**2.14 - Fair**
Large-leaved Grass-of-Parnassus	***Parnassia grandifolia***	**2.5 - Fair**	**2.51 - Good**
Ouachita Leadplant	***Amorpha ouachitensis***	**2.5 - Fair**	**2.53 - Good**
Ozark Chinquapin	***Castanea pumila var ozarkensis***	**2.5 - Fair**	**1.96 - Fair**
Southern Lady's-Slipper	***Cypripedium kentuckiense***	**2.5 - Fair**	**2.80 - Good**
Waterfall's Sedge	***Carex latebracteata***	**2.5 - Fair**	**2.33 - Fair**
Heartleaf Leafcup	**Polymnia cossatotensis**	**2.5 - Fair**	**2.0 - Fair**
Dryopteris	**Dryopteris x australis**	**2.5 - Fair**	**2.8 - Good**
Ozark Least Trillium	***Trillium pusillum var ozarkanum***	**2.47 - Fair**	**1.95 - Fair**
A Twistflower	***Streptanthus squamiformis***	**2.46 - Fair**	**1.65 - Fair**
Shinners' Sunflower	***Helianthus occidentalis ssp plantagineus***	**2.44 - Fair**	**2.47 - Fair**
Nuttall's Corn-Salad	***Valerianella nuttallii***	**2 - Fair**	**1.67 - Fair**
Maple-leaved Oak	***Quercus acerifolia***	**2 - Fair**	**1.67 - Fair**
Open-ground Whitlow-grass	***Draba aprica***	**2 - Fair**	**1.67 - Fair**

Terrestrial Proposed, Endangered, and Threatened Species Habitat

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The Endangered Species Act of 1973 requires that all threatened and endangered species and their habitats be protected on federally managed land. Proposed, Endangered and Threatened species addressed in this report include all federally listed species where their ranges include part or all of the Forest. There are 13 federally listed species that are considered as occurring on or potentially occurring on the Forest, and 8 are terrestrial species. Specifically within the Ouachita NF, 5 terrestrial, federally endangered species and 3 species listed as threatened occur, or have the potential to occur on the Forest. For the 3 listed birds, 2 mammals, 1 plant, 1 insect, and 1 reptile species, habitat scores indicate that the Burying Beetle and Indiana Bat are stable, that the Red-cockaded Woodpecker has improved, and the American Alligator scored very good in the 2010 evaluation. The Species Viability database will need to be updated to evaluate and obtain scores for Least Tern, Northern Long-Eared Bat and Piping Plover, a species not known to frequent the Ouachita NF.

A list of species, species federal status, and a comparison of 2005 and 2010 SVE scores follows. These data were prepared for the 5-year Review and were not updated in 2015 or 2016, as anticipated, due to personnel and database constraints.

Federally Listed Species on the ONF and SVE Scores 2005, 2010, and 2015

Common Name and Scientific Name	Federal Listing	2005 SVE Score	2010 SVE Score
American Burying beetle (*Nicrophorus americanus*)	Endangered	1.92 Fair	1.97 Fair
Indiana Bat (*Myotis sodalis*)	Endangered	2.86 Good	2.52 Good
Least Tern (*Sterna antillarum*)	Endangered	NA- Not evaluated- Red Slough only	NA- Not evaluated- Red Slough only
Northern Long-Eared Bat* *(Myotis septentrionalis)* **Listed in April 2015*	Threatened	NA- Not evaluated	NA- Not evaluated
Piping Plover (*Charadrius melodus*)	Endangered	NA- Only passing occurrences on the Forest	NA- Only passing occurrences on the Forest
Red-cockaded Woodpecker (*Picoides borealis*)	Endangered	2.50 Fair	2.72 Good
American Alligator (*Alligator mississippiensis*)	Threatened by similarity of appearance (to other listed crocodilians)	NA- Not evaluated	4.00 Very Good
Missouri Bladderpod (*Lesquerella filiformis*)	Threatened	NA- Not evaluated	NA- Not evaluated

American Burying Beetle (*Nicrophorus americanus*)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

In May 2010, the U.S. Fish and Wildlife Service (USFWS) issued a Revised Programmatic Biological Opinion for the American Burying Beetle (ABB) that remapped the ABB areas on the Forest and incorporated the joint Ouachita and Ozark-St. Francis ABB Conservation Plan (USDA Forest Service 2010).

This Conservation Plan used the most current research and data from the USFWS and the 3 National Forests. It addresses conservation and improvement of habitat for ABB rather than just protecting individual beetles from human disturbances, which was the focus of earlier work.

American Burying Beetle
Source: USFS

A Conservation Plan has also been created for Ft. Chaffee, near Ft. Smith, AR, and all parties are communicating, comparing data, and assisting each other for the benefit of this endangered species. Results from implementation of the new Conservation Plan are not yet evident due to the short implementation time (5 years).

Previously, Forest Plan Standard TE005 read: *"Potential project level impacts on individual American Burying Beetles will be reduced by using the U.S. Fish and Wildlife Service's current bait-away or trap-and-relocate protocols."* The bait-away and trap-and-relocate protocols are no longer the method of conservation endorsed by the USFWS. The Forest Plan requirement TE005 was changed (via an early 2015 administrative correction) to: *"Project planning will adhere to the Conservation Plan and current Programmatic Biological Opinion regarding American Burying Beetles (ABBs) on the Ouachita and Ozark-St. Francis National Forests, as well as adhering to any other current FWS direction available."* In 2014, the Forest Service transitioned to the new protocol of 1, 5-gallon bucket per trap line instead of 8 cups. In 2013 and earlier, it was 24 trap-nights/survey because each cup was individually considered one trap-night. In 2014 and beyond, the count is 5 trap-nights/survey.

In 2014, 2015 and 2016 under the new protocol, 36 transects were monitored using the USFWS protocol, for a total of 155 trap nights. Some of these transects were located in the American Burying Beetle areas (ABBAs) established in the Conservation Plan. The remaining transects occur outside the ABBAs as indicated in the ABB Conservation Plan Monitoring Strategy. No ABBs were captured on either Oklahoma or Poteau/Cold Springs Ranger Districts in 2016.

Indiana Bat (*Myotis sodalis*)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

All current habitat use and distribution data for the Indiana bat, in combination with extensive District, Forest and regional surveys, a recent Anabat (acoustic detection) survey conducted during the maternity period, and captures during the Ouachita Mountain Bat Blitz have located only a few individuals of this species in the Forest or on adjacent lands in recent years. According to the 5-year review on the status of the Indiana bat, white-nose syndrome has reduced the range-wide population by approximately 50%, with greater mortality expected (USFWS 2009).

Indiana Bat
Source: www.enature.com

Surveyors in 2012 found at least 5 Indiana bats hibernating in Bear Den Cave. No surveys were conducted at Bear Den Cave 2013 - 2016 due to budget constraints.

Data from the Indiana Bat Recovery Team and other sources in the scientific literature show there are no records of this species reproducing in Arkansas or Oklahoma and that Indiana bats typically travel north from winter hibernacula (located in the Ozarks and in southeastern Oklahoma), not south into the Ouachita Mountains. Indiana bats occasionally hibernate in small numbers (25 in 2010) in Bear Den Cave on the Forest in eastern Oklahoma but have not been detected there during the breeding season. Bear Den Cave represents the only natural cave habitat occurring on the Forest, occurring within the congressionally designated areas associated with Winding Stairs National Recreation Area. Very little active management occurs near the caves other than protection of the cave habitat by gating. Based on the 2005 SVE, the Indiana bat habitat score was 2.86 ("Good") on the Forest. The 2010 SVE indicated that the Indiana bat habitat SVE score has declined to 2.52, which is still in the "Good" range, but near the break-point of "Fair." This decline is likely related to the decline in the vegetation conditions for Indiana bat habitat outside and near the cave/mine habitat. These data were prepared for the 5-year Review and were not updated in 2015 or 2016, as anticipated, due to personnel and database constraints. All known cave and mine habitat has restrictive gating to prevent harmful access.

Northern Long-eared Bat (*Myotis septentrionalis*)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

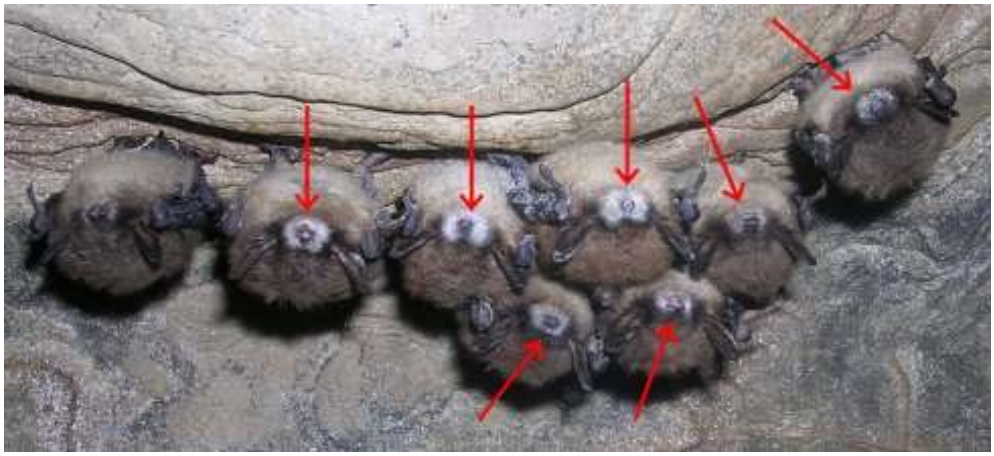
The Northern long-eared bat (NLEB) was proposed as an endangered species in October 2013 and listed as threatened April 2015. NLEB is a common bat species on the Ouachita NF and, prior to federal listing, was not a species of concern in Arkansas. However, the NLEB is one of the species of bats most impacted by white-nose syndrome. Identifying, protecting, and restoring summer maternity sites, as well as cave/mine winter hibernacula are primary objectives of the Ouachita NF's management program for all bats. In 2015, 4 NLEBs were found in a single location but only 2 were found during 2016 monitoring at a single location.

Northern Long-Eared Bat
Source: www.fws.gov

Bats and White-Nosed Syndrome (WNS)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Since the winter of 2006, White-nose Syndrome has killed more than 5.7 million bats in Eastern North America. White-nose Syndrome (WNS) is a disease caused by a non-native, cold-loving fungus which can be found in many caves. The fungus is transmitted primarily from bat to bat. The white fungus is scientifically called *Pseudogymnoascus destructans* and refers to the white fungal growth found on the noses of infected bats, although it may also be found on their wings and tail membrane (www.Batconservation.org). The fungus disrupts bats' hydration and hibernation cycles causing the infected hibernating bats to awake repeatedly during the winter in search of insects and other food that is not available. The disrupted hibernation causes bats to burn up limited fat reserves by going out into the cold often causing mortality.



Arrows point to unusual white noses on bats in a New York cave during the winter, 2006.

The Ouachita NF initiated a bat acoustic survey protocol in 2009 to monitor bat population trends and assess the impacts of White Nose Syndrome (WNS) on the summer distribution of bats. Arkansas became the 23rd state to confirm the deadly disease in bats in May 2014. Since then, the fungus has spread to 6 other states. Currently, WNS is found in 29 US states, including northern Arkansas within the caves on the Ozark NF, in 2 caves on the Ouachita NF, and 5 Canadian provinces. On the Ouachita NF, WNS was detected in 2015 at 1 location (Spillway Mine). During 2016, 2 sites that were tested (Sleeping Child and Spillway Mines) both came back positive for swabs, indicating the presence of the WNS fungus. Bats in Hog Pen Mine, Charlton Mine, Monte Cristo Mines, and Chalk Mine were also tested for the presences of white-nose fungus, but these tests came back negative. The Forest has gated most known mines or caves with bat-friendly gates to allow access for the bats and to prevent other disturbances. These measures are in place to implement the management goal of slowing the spread of the disease so that biologists have time to better understand the implications of WNS and to find stopgap measures to slow the spread of the disease.

Up-to-date information may be found at https://www.whitenosesyndrome.org/faqs.

Least Tern (*Sterna antillarum*) and Piping Plover (*Charadrius melodus*)

For additional information, contact Robert Bastarache at rbastarache@fs.fed.us

Most Least Terns and Piping Plovers that occur on the Ouachita National Forest in Arkansas and Oklahoma are passing migrants and are only occasionally seen foraging within the Red Slough Wildlife Management Area.

Least Tern
Source: www.enature.com

Piping Plover
Source: www.enature.com

The Least Tern and Piping Plover are not known to occur as reproducing populations on the Forest (James and Neal, 1986; Peterson, 1980). At the time of Forest Plan formulation there were no known element occurrence records (breeding locations) on the Forest; therefore, these species were not included in the SVE.

During 2016, Least Tern numbers were still below the 10-year average, with only 18 documented. This number was about 50% less than the 10-year average of about 50 individuals. The Red River experienced major flooding in May/June 2016, causing Red Slough to have higher than normal water levels during these months. This was the second consecutive year of major flooding along the Red River, with the river reaching its highest flood stage ever in May 2015. Two years of consecutive flooding has significantly decreased the breeding success of the Least Terns on the Red River. The lower numbers of Least Terns using Red Slough to feed can be directly linked to the floods and reduced breeding success along the Red River.

During 2016, no Piping Plovers were documented at Red Slough, although 2 has been sighted during 2015, the first since 2006. The tabulation below for Least Terns and Piping Plovers observed within Red Slough shows that Least Terns are observed much more often than Piping Plovers.

Least Terns and Piping Plovers by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Least Terns	17	56	81	21	63	8	9	18	82	47	18
Piping Plovers	1	0	0	0	0	0	0	0	0	2	0

Red-cockaded Woodpecker (*Picoides borealis)*

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us or Robert Bastarache at rbastarache@fs.fed.us

The Red-cockaded Woodpecker (RCW) is both a federally listed endangered species and an MIS for the Ouachita NF. MA 22, Renewal of the Shortleaf Pine-Bluestem Grass Ecosystem and Red-cockaded Woodpecker Habitat, (approximately 188,002 acres) was established as an area for the renewal of the Shortleaf Pine-Bluestem Grass Ecosystem and Red-cockaded Woodpecker habitat. This MA is located on NF System lands on the Poteau/Cold Springs, Mena, and Oklahoma Ranger Districts. These lands consist primarily of extensive blocks of Pine-Oak Forest, Pine-Oak Woodlands, and intermingled stands of Dry-Mesic Oak Forest. In addition to providing extensive areas in which restoration of pine-bluestem ecosystems is featured, MA 22 incorporates 2 Habitat Management Areas (HMAs; one each in Arkansas and Oklahoma) for the endangered RCW. As required by the 1995 Red-cockaded Woodpecker EIS, HMAs (MA 22a) have been designated. The HMA acres on the Ouachita NF are shown by Ranger District in the following tabulation:

Red-cockaded Woodpecker
Source: www.enature.com

Habitat Management Areas
Acres by District, ONF

District	Cold Springs	Mena	Poteau	Tiak	Total
Acres	6,581	11,147	66,584	50,945	135,257

The remaining part of MA 22 (entirely in Arkansas) is the Extended Area, or MA 22b. The Extended Area provides for renewal of the shortleaf pine-bluestem grass ecosystem and future expansion habitat for RCWs.

The 2005 Forest Plan has a management objective to *"maintain or improve the population status of all species that are federally listed or proposed for listing."* The Red-cockaded Woodpecker (RCW) is a management indicator species for the Ouachita NF because it has Federal endangered species status. It was selected to indicate the effects of management on recovery of this species and to help indicate effects of management on shortleaf pine-bluestem woodland community (USDA Forest Service 2005b, p166).

Because the Red-cockaded Woodpecker is an endangered species, it is one of the most intensively monitored species on the Ouachita NF. Monitoring is conducted with high precision, intensity, and reliability. Active territories, nesting attempts, fledgling estimates, banding, augmentation, and the number of adults are tracked and reported annually to the USFWS.

The following table shows the history of RCW management on the Ouachita NF and displays, by breeding season, the number of active territories (individual or group of nesting or roosting RCW(s)), nesting attempts (nesting behavior which results in at least 1 egg), the estimated number of fledglings (nestlings that left the nest), and the number of adult birds. Of these, the most descriptive parameter of

RCW population status is the number of nesting attempts, or what is often referred to in the RCW Recovery Plan as the number of Potential Breeding Groups (USDI FWS 2003). Due to District reorganization in 2014, other wildlife management duties prevented some of the more intensive monitoring of RCW that had been accomplished prior to that date.

RCW Management, by Breeding Season, ONF				
RCW Breeding Season	**Active Territories**	**Nesting Attempts**	**Estimated Fledglings**	**Number of Adult Birds**
2000	21	15*	13	48
2001	22	18	40	51
2002	27	24*	40	58
2003	32	27*	47	68
2004	32	28	49	78
2005	35	29	18	87
2006	37	32	49	88
2007	40	37	67	103
2008	47	42	58	110
2009	51	47	77	120
2010	57	51	88	138
2011	59	57	86	145
2012	61	59	118	155
2013	67	59	114	158
2014	70	Data Incomplete[1] 47[2]	No Data[1]	No Data[1]
2015	60[3]	Data Incomplete[1] 16[2]	No Data[1]	No Data[1]
2016	60	32[2]	No Data[1]	No Data[1]

**Includes renest attempts*

[1] Due to reduction in personnel and funding, monitoring for nest attempts, fledglings and adult birds were discontinued.

[2] Documented nesting attempt as determined by limited presence/absence surveys

[3] Estimated Territories based on information from the 2015 CFLRP Report (p. 17).

Management of this species is guided by the RCW Recovery Plan, with an objective of a minimum 5% population increase per year as specified in Section 8.A.1 of the Recovery Plan (USDI FWS 2003, page 162). Populations of this species on the Forest exhibit a generally increasing trend; however due to personnel constraints, no data has been acquired for the number of adult birds for the past 3 years. Barring any major catastrophic events, RCW populations should continue to improve under the present management intensity. A large-scale ecosystem restoration project was initiated to restore the shortleaf pine-bluestem grass ecosystem on over 200,000 acres (principally in Management Area 22). This project will eventually provide sufficient habitat for a recovery population of the endangered Red-cockaded Woodpecker (USDA Forest Service 2005a). Also, during 2013, a successful translocation to the Oklahoma Ranger District resulted in the first nesting pair of RCWs on the Oklahoma side of the ONF which produced 2 hatchlings. It was also the first nesting pair outside of the McCurtain County Wilderness Area in almost 30 years. As the pine/bluestem ecosystem is restored and the acres of quality habitat are increased, the main factors influencing species population and recovery will be the limitations of population dynamics and uncontrollable natural influences. Ouachita NF habitat management should be the focus of monitoring efforts in the future to address the ability of RCW to continue nesting and nesting attempts.

American Alligator (*Alligator mississippiensis*)

For additional information, contact Robert Bastarache at rbastarache@fs.fed.us

American Alligators at Red Slough
Photo Courtesy of David Arbour

American alligators range across southeastern North America. With enforcement of protective legislation, populations have shown rapid recovery from habitat loss and over-hunting. They are stable or increasing in most of this species' range. Even though the American alligator is no longer biologically endangered or threatened, it is still listed by the USFWS as "Threatened" throughout its entire range due to the similarity of appearance to other endangered or threatened crocodilians. It was pronounced fully recovered in 1987 and now seems secure from extinction. The only suitable or potential habitat for this species on the Forest is within the West Gulf Coastal Plain Wet Hardwood Flatwoods of the Red Slough WMA of southeastern Oklahoma, in streams, ponds and ditches. At least one alligator has also been observed in Broken Bow Lake in Oklahoma, but there is not much suitable habitat for this species on nearby National Forest System land.

Alligators Counted by FY, ONF*

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Alligators counted	7	7	3	6	7	8	10	21	16	no survey	32

***Numbers above reflect a 2015 correction to alligators surveyed only on NF system lands. Previous Monitoring Reports had included numbers of alligators counted in surveys of Ward Lake, which is 2/3 private and 1/3 public and is not regularly surveyed.**

The Oklahoma Department of Wildlife Conservation recorded an all-time high of 32 alligators during the spring 2016 survey. This significant increase is attributed to successful overwintering of the 2015 hatch. Of the 32 alligators recorded, 11 of them were young from the previous year's hatch. This is the most young that have been counted on any annual survey. Numbers are further enhanced due to young hatched in years prior to 2015 surviving to a detectable size (approximately 3-4'). Six alligator nests were found in 2016, which is the most recorded during a single nesting season. Two nests produced a total of 46 young, 3 nests were raided by predators, and another nest did not have any eggs. Trends for the Red Slough alligator population indicate an increasing population size due to sustained successful hatching and overwintering.

This species was not known to reproduce on the Forest during the 2005 plan revision efforts, but has been reproducing regularly in the Red Sough WMA in recent years.

Missouri Bladderpod (*Physaria filiformis*)

For additional information, contact Susan Hooks at shooks@fs.fed.us

Missouri bladderpod, *Physaria filiformis* Rollins (O'Kane & Al-Shehbaz), formerly included in the genus *Lesquerella* (as *Lesquerella filiformis* Rollins), is a federally listed Threatened species in the family Brassicaceae added to the Federal List of Endangered and Threatened Plants in January 1987. This species was not known to exist on the Forest in 2005; however, in 2015, 2 new sites for Missouri bladderpod were located on National Forest land. The sites were surrounded by open woodlands and in some areas, with dense eastern red cedar. This species occurs in open glade or barren habitat containing treeless areas with very thin soil and exposed bedrock. The 2 new locations are smaller sites within a known local population. The newly discovered sites had low numbers, less than 200 individuals, and were in flower and fruit when located. There were no apparent signs of disease or damage from browsing. No additional monitoring was conducted in 2016.

Wildlife Management Considerations

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

In addtion to managing for species viability and health, the Ouachita NF maintains a very active role in coordinating with the Arkansas Game and Fish Commission and the Oklahoma Department of Wildlife Conservation. Walk-In Turkey Areas, Hunting, and Wildlife Management Areas are discussed below.

Walk-In Turkey Areas

There are 9 Walk-In Turkey Areas on the Ouachita NF, 7 in Arkansas and 2 in Oklahoma: Sharptop Mountain, Leader Mountain, Hogan Mountain, Fourche Mountain, Deckard Mountain, Shut-In Mountain, Chinquapin Mountain, Blue Mountain (OK), and Well Hollow (OK). Walk-In Turkey Areas were established at the request of turkey hunters that desired opportunities to hunt on public lands managed by the USDA Forest Service in a place free of disturbance from motor vehicles. The Ouachita Mountains, with high turkey populations compared to other areas, have experienced a dramatic increase in the number of hunters during the last 25 years, making it challenging for serious turkey hunters to find an area to hunt away from traffic and noise.

The Ouachita NF Walk-In Turkey Hunting Areas are a joint partnership between the USDA Forest Service, Arkansas Game and Fish Commission, and the Arkansas Wild Turkey Federation as a part of the partnership program, "Making Tracks". Since 1989, the Forest Sevice has worked cooperatively with the Oklahoma Department of Willdlife Conservation to manage the Blue Mountain and Well Hollow Walk-in Turkey Areas to improve wild turkey habitat on National Forest System lands.

In OK, 5 food plots each (or 10 acres/Area) are annually maintained in Well Hollow Walk-In Turkey Area and Blue Mountain Walk-In Turkey Area both within the Ouachita WMA, managed cooperatively with the ODWC. During 2016, the NWTF assisted in improving available wild turkey habitat through funding 98 acres of midstory reduction in the Well Hollow Mountain Walk-in Turkey Hunting Area. In the McCurtain WMA, the NWTF contributed prescribed burning funding for the benefit of eastern wild turkey habitat.

Hunting and Wildlife Management Areas

Hunting is permitted anywhere on the Ouachita National Forest except within developed recreation sites or otherwise posted areas. All state hunting and fishing regulations, fees, and seasons apply on National Forest System lands. Hunting with dogs is not allowed on Ouachita National Forest System lands within WMAs managed by either the Arkansas Game and Fish

Commission or the Oklahoma Department of Wildlife Conservation. Hunting with dogs is still allowed on the general forest area of the Ouachita National Forest in Arkansas. By contrast, hunting with dogs is not allowed on the Ozark-St. Francis National Forests.

The Arkansas Game and Fish Commission (AGFC) manages Arkansas' fish and wildlife populations for their ecological values and for their use and enjoyment by the public. The Oklahoma Department of Wildlife and Conservation (ODWC) does the same for Oklahoma.

In Arkansas on the Ouachita NF there are 3 Wildlife Management Areas (WMAs), each established by Memorandum of Understanding between the land-owning parties in 1968: Caney Creek, Muddy Creek and the Winona Wildlife Management Areas. These WMAs are managed by the Arkansas Game and Fish Commission for the benefit of the hunting public. Within the state of Arkansas, these are only 3 of the total of 127 Wildlife Management Areas created for the public for hunting.

Caney Creek WMA (85,000 acres) is primarily located on lands within the National Forest, although there is some privately-owned land within the management area boundary. The Caney Creek WMA occupies portions of Howard, Montgomery, Pike, and Polk Counties. AGFC contributes to the maintenance of the Caney Creek WMA. During 2016, they contributed $21,336.90 for mowing of 125 acres and planting 70 acres of food plots.

Muddy Creek WMA (145,000 acres) is located on National Forest System land and lands owned by other cooperators in Montgomery, Scott, and Yell Counties. AGFC provides the maintenance for Muddy Creek WMA. For 2016, maintenance included mowing 324 acres and planting 114 acres of wildlife plots. The maintenance schedule has been moved to a 3-year rotation due to funding limitations ($31,671.00 in 2016). Other maintenance included repairs to 16 gates (repairing crossbars and post and replacing missing locks).

The **Winona WMA** (174,000 acres) is located in Garland, Perry, and Saline Counties. The AGFC spent $34,407.00 in 2016 to mow 320 acres and plant 108 acres of food plots. Food plot maintenance in the Winona WMA was moved to a 3-year rotation due to limited funding.

In Oklahoma there are 3 WMAs on the Ouachita NF, jointly managed in cooperation with the ODWC. Oklahoma is unique for the Ouachita NF in that all National Forest System lands within the 2 counties in Oklahoma are contained within WMAs.

All of the National Forest System lands within LeFlore County are contained within the **Ouachita LeFlore Unit WMA** (212,836 acres) including the former **Cucumber Creek WMA** (12,627 acres, with 3,514 owned by The Nature Conservancy). In the Ouachita LeFlore WMA, 130 food plots are maintained in cooperation with the ODWC and National Wild Turkey Federation (NWTF). For 2015, 45-50 acres of food plots were maintained.

All of the National Forest System lands within McCurtain County are contained within either the **McCurtain Unit WMA** (127,191 acres) or the **Red Slough WMA** (5,814 acres). The NWTF contributes to treatments with prescribed fire, which is on a 3-year rotation allowing for almost continual new growth. The Red Slough WMA is cooperatively managed by the Ouachita NF, Natural Resources Conservation Service (NRCS), and ODWC. The Red Slough WMA bird surveys through 2015 revealed a total of 317 bird species. Activities accomplished during 2015 include providing 54 tours, removal of 57 feral hogs, treatment of 481 acres with prescribed fire, and disking of 123 acres.

Aquatic and Riparian Ecosystems and Habitat

The desired condition for riparian and aquatic-associated terrestrial ecosystems (within designated Streamside Management Areas) "…*is high water quality, undiminished soil productivity, stable streambanks, and high-quality habitat for riparian-dependent and aquatic species. Properly functioning systems support healthy populations of native and desired non-native species."*

Aquatic and Riparian Communities Areal Extent and Ranking

Management Area 9, Water and Riparian Communities, consisting of approximately 278,284 acres, is the primary MA associated with riparian and aquatic ecosystems. It consists of streams, rivers, lakes and ponds, and streamside management areas necessary to protect water quality and associated beneficial uses found within the Ouachita Mountains, Arkansas River Valley, and West Gulf Coastal Plain. Management Area 9 direction applies to streams, riparian areas, ponds, and lakes, except where even more stringent management requirements are in place, notably in wilderness areas (MA 1). Included are flowing and non-flowing aquatic habitats; wetlands; woodland seeps and springs; portions of floodplains; variable distances (but at least 100 feet) from both edges of all perennial streams and from the shores of bodies of water equal to or greater than one-half acre; variable distances (but at least 30 feet) from both edges of other streams with defined stream channels and ponds less than one-half acre in size; and certain lands surrounding public water supplies, lakes, and streams.

Riparian and aquatic associated ecosystems comprise approximately 17 percent of the Forest, and are managed within designated Streamside Management Areas (SMAs) to protect and maintain water quality, productivity, channel stability, and habitat for riparian-dependent species. The desired condition is that watercourses are in proper functioning condition and support healthy populations of native species. Due to the similarity in the characteristics and the conservation management of these communities, they are grouped together for the analysis of potential management effects. Brief descriptions and desired conditions for individual riparian and aquatic associated ecosystems are provided in the following paragraphs.

There are 5 riparian-associated community types and 2 aquatic ecosystems identified for watershed value as well as aquatic habitat:

Riparian-Associated Community Types

1. Ouachita Mountain Forested Seep
2. Ouachita Riparian
3. West Gulf Coastal Plain Small Stream and River Forest
4. South-Central Interior Large Floodplain
5. West Gulf Coastal Plain Wet Hardwood Flatwoods (Red Slough)

Aquatic Ecosystems

1. Ouachita Rivers and Streams
2. Ouachita Ponds, Lakes, and Waterholes

The 2010 SVE scores for the Ouachita Mountain Forested Seeps, Ouachita Riparian, West Gulf Coastal Plain Small Stream/River Forest, and West Gulf Coastal Plain Wet Hardwood Flatwoods (Red Slough, in Oklahoma) are all at or above the 10-year (2015) projected values. However, the SVE score for South-Central Interior Large Floodplain reflects severe decline for 2010, and the SVE score for the Ouachita Mountain Forested Seeps only projects a "Fair" value even at the 10-year (2015) interval. The Key Factor/Indicator influencing the SVE scores is road density.

Comparison using different datasets (2005 vs. 2010) also influenced the SVE score. It is recommended that the SVE analysis be repeated for comparison purposes in the near future.

Viability Rank of Riparian and Aquatic-Associated Communities (2005, 2010, Projected 2015), ONF

Riparian or Aquatic-Associated Community	2005 SVE Score/ Condition	2010 SVE Score/ Condition	2015 Projected (10-year) SVE Score/ Condition
Ouachita Riparian	**3.0 Good**	**3.0 Good**	**2.6 Good**
Ouachita Mountain Forested Seeps	**2.5 Fair**	**2.5 Fair**	**2.5 Fair**
South-Central Interior Large Floodplain	**4.0 Very Good**	**2.5 Fair**	**4.0 Very Good**
West Gulf Coastal Plain Small Stream/River Forest	**3.0 Good**	**3.0 Good**	**3.0 Good**
West Gulf Coastal Plain Wet Hardwood Flatwoods (Red Slough, OK)	**3.0 Good**	**4.0 Very Good**	**3.2 Good**

Aquatic and Fisheries Habitats and Elements

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Monitoring of the seven aquatic ecosystems is reported in several categories:

- Aquatic Communities/Fisheries Habitat including
  - Aquatic Management Indicator Species (MIS)
    - Ponds, Lakes, and Waterhole MIS
    - Other Pond, Lake and Waterhole Species
    - Stream and River MIS
      - Basin Area Stream Surveys
      - Arkansas River Valley Stream MIS
      - Gulf Coastal Plain Ecoregion Stream MIS
  - Aquatic Dependent Proposed, Endangered, and Threatened species and their Habitat
  - R8 Sensitive and Other Aquatic Species of Viability Concern
- Game Fish Habitat
- Aquatic Habitat Enhancement Activities
- Amphibian Habitat

Aquatic Management Indicator Species (MIS)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

There are 14 fish MIS associated with stream and river habitat, and 3 pond, lake and waterhole MIS (17 fish species total). These MIS are monitored and serve as representatives for other species. A complete list of the MIS species is found on page 58 of this report. Periodically, the specialists of the Ouachita NF prepare a separate Management Indicator Species Report. The last such report was completed in November 2008 and is available at the following location: www.fs.usda.gov/ouachita.

Pond, Lake, and Waterhole MIS

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

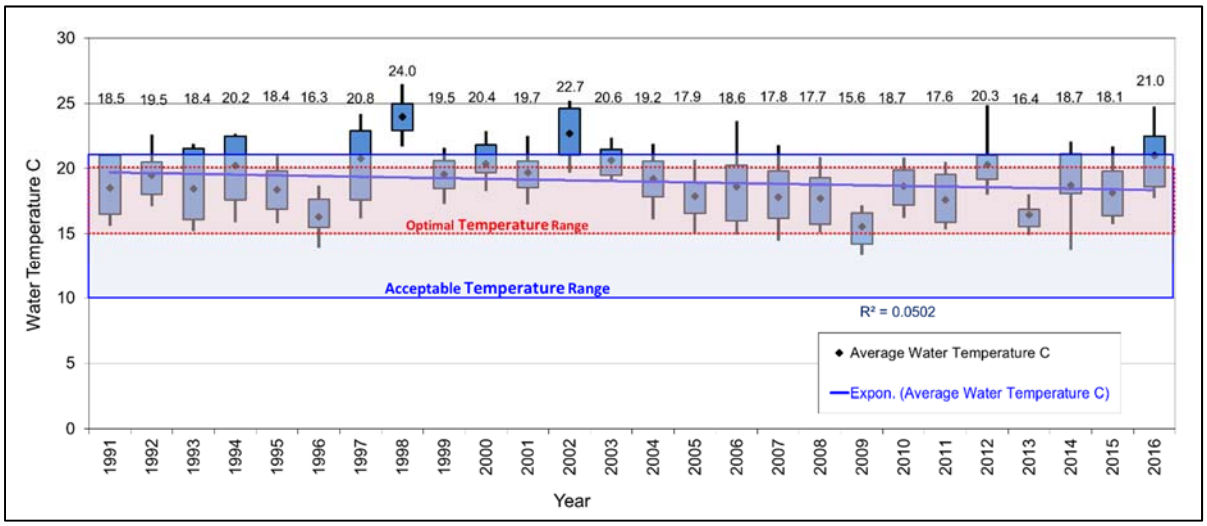
There are 3 pond, lake, and waterhole management indicator species (MIS): Bluegill, Largemouth Bass, and Redear Sunfish. The primary method of assessing Forest-wide populations is boat electrofishing. The Ouachita NF acknowledges the help in sampling by Dr. Jim Taylor and classes from Ouachita Baptist University for the past 15 years.

Ouachita Baptist University Students Assisting with Sampling

Electrofishing results since 2003 have been somewhat similar. The spring electrofishing seasons in the past several years have been characterized as wet springs with temperatures cooler than normal and the result that sunfish spawns have been missed. Also, the fall electrofishing seasons, more recently, have been affected by a number of fronts that tended to push fish into deeper water with resultant lower catch rates but also by warm temperatures that kept sunfish from schooling over structure and less susceptible to electrofishing capture. As seen in the annual pooled water temperature graph that follows, the pooled water temperatures of the samples became warmer 1997 through 2003 and again, in 2016. Spring sampling was moved to an earlier time period to avoid such warm lake temperatures toward the

end of the season and also, to push back the fall sampling to try to get cooler fall water temperatures. While the overall trend would indicate a successful outcome with that goal, particularly with the Largemouth Bass; there still remains a lot of variability in sample water temperatures across the years. Sunfish sampling of the larger sized Bluegill and Redear Sunfish has declined in numbers which is a concern that the larger spawning fish are being missed in the spring. Sample water temperatures are taken just prior to the start of electrofishing at each waterbody. While the air and surface water temperatures may warm some in the course of sampling (1-2 hour span), it would be a small, insignificant change considering the volume of water in each lake and pond and would not affect the fish. Barometric pressure would be a good indicator of fronts moving through; but since only an instantaneous pressure reading can be taken at the time of sampling, there is no indication of prior or post sampling barometric trends. The pressure reading at the time of the sample isn't felt to be of much use and the taking of the barometric pressure has been discontinued after equipment failure. The timing of fronts moving through is the needed value and no practical/cost-effective way has been devised to record the timing and amount of change caused by such an occurrence.

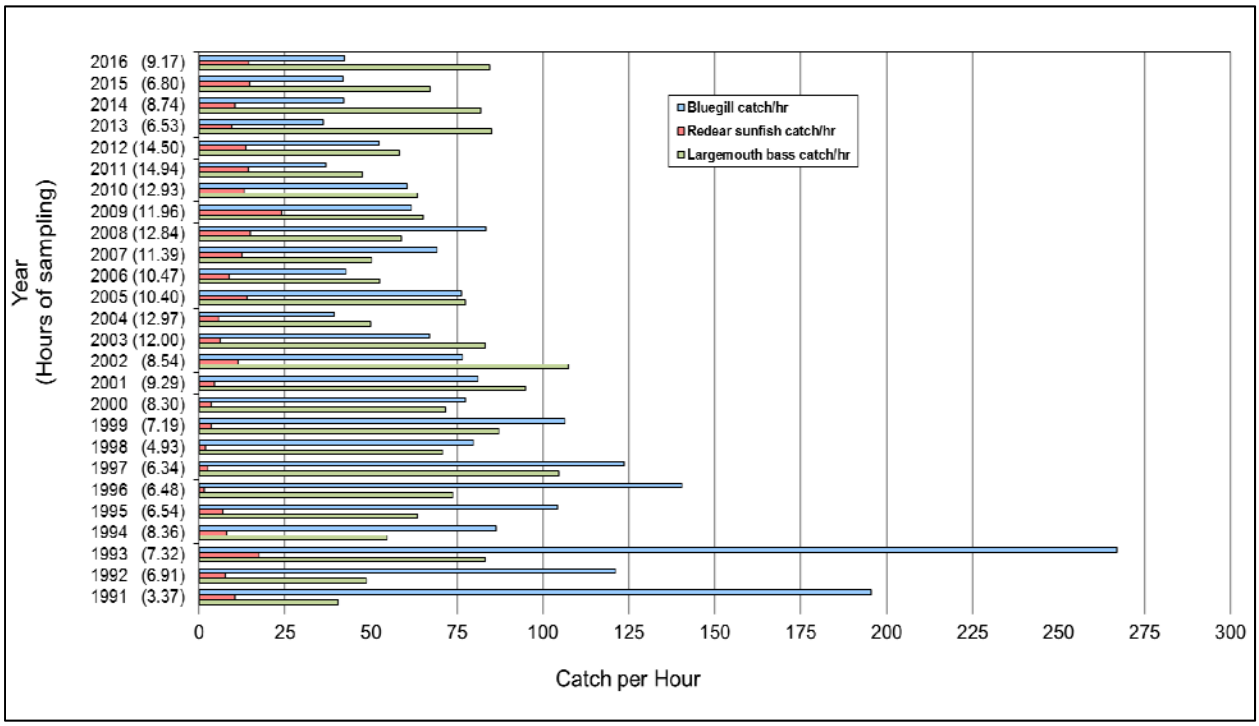
Annual Pooled Water Temperatures by Year (electrofishing), ONF



While there is a fair amount of variability between lakes and years in water temperatures, the majority of the samples fall within the optimal temperature range as defined by the AGFC, particularly after the 2004 and 2014 sampling date adjustments described above**.**

The following discussions of Bluegill, Largemouth Bass, Redear Sunfish and Gizzard Shad, are by calendar year, not the Forest Service's fiscal year. Fisheries data are analyzed by year class or birth year. For any given year, spring sampling occurs in April in one fiscal year and the fall electrofishing and gill netting, which occurs after October 1, falls into the following fiscal year. Therefore, the sampling in the spring occurred during FY 2015 and the fall sampling took place at the start of FY 2016 and data for both are included in this report for 2016.

Annual Pooled Catch per Hour
Bluegill, Largemouth Bass and Redear by Calendar Year, ONF (electrofishing)



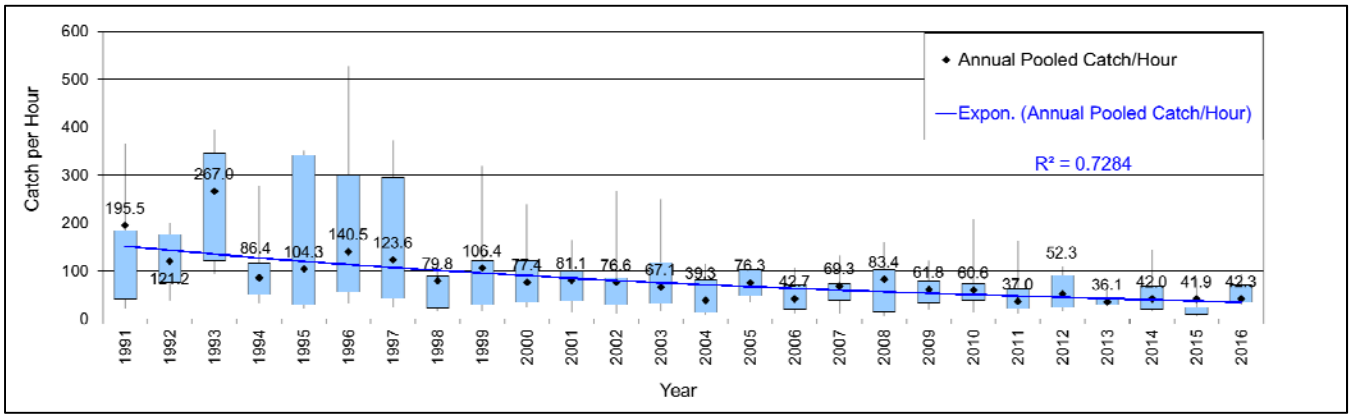
Bluegill *(Lepomis macrochirus)*

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Bluegill
Source: Rich Standage, USFS

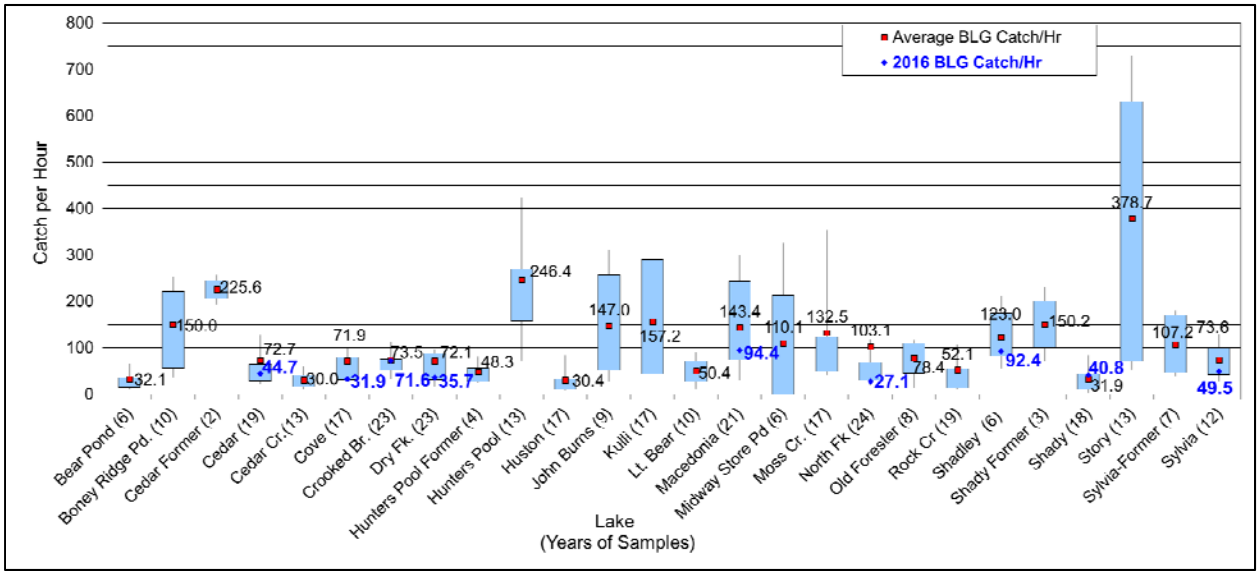
The Bluegill electrofishing catch for 2013 was the lowest since 1991; however, there were increases in 2014 - 2016. The 2016 catch per hour value was the second highest since 2011 with fairly similar results for the last 3 years. Recently, spring samplings have occurred before the bass spawn, and in most of the lakes, the larger sunfish had not started to congregate to spawn either. The fall pond sampling likely missed schooled large sunfish and less ponds and lakes were sampled than normal, further compounding the shortfall of larger sunfish catches. Ideally, Largemouth Bass have spawned before the spring sample but are still nest guarding, the Redear Sunfish are in the process of spawning, and the Bluegill are staging in shallower areas to spawn, so that a good representation of all species and sizes are sampled. The ideal condition has not occurred in the recent past. The trend line associated with the annual pooled catch per hour is only slightly statistically significant and seems to be leveling out. The following graph displays the variability in annual samples with the widened bars displaying the 25-75 percent range of the samples and the lines displaying the variability to the 10 percent and 90 percent levels. The annual 2016 pooled catch of Bluegill was 42.3 which was slightly higher than the previous 3 years.

Annual Bluegill Catch per Hour by Year Forest-wide, ONF (electrofishing)



Story Pond had a very high Bluegill catch per hour of 378.7; however, it appears on a Forest-wide basis, the catch per hour is highly variable but can be expected to be in the 30 to 90 range most years. Undoubtedly, there will continue to be fluctuation within individual lake catches as seen in the following graph of catch per hour by lake. For 2016, 8 of 9 Bluegill catch per hour results were under their long-term averages by varying amounts.

Bluegill Catch per Hour by Lake (electrofishing), ONF

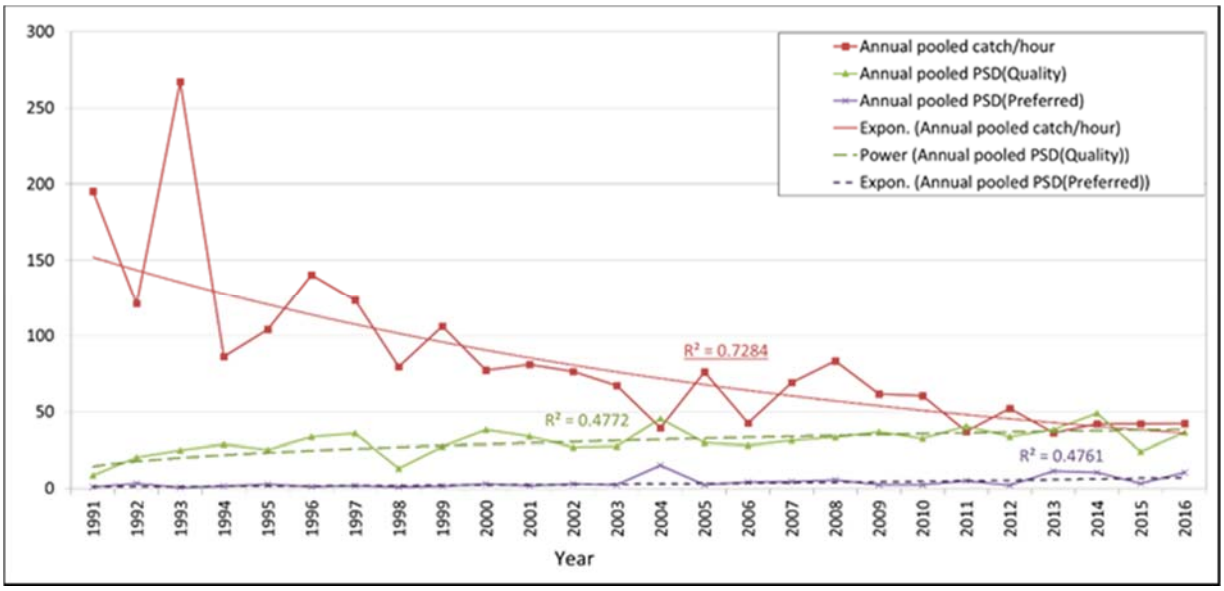


The trends for the harvestability of Bluegill have remained relatively steady for the past 3 years. For 2016, the trend was slightly above the prior 2 year's Proportional Size Distribution (Quality), also known as PSD(Q). PSD(Q) is calculated from the numbers of Bluegill 150 mm (5.9 inches) and larger divided by the numbers of Bluegill of stock size (adults) that are 80 mm (3.1 inches) and larger, expressed as a percentage. The trend line shows a slightly increasing trend; however, it is not statistically significant ($r^2 = 0.47$).

Student Volunteer Helping with Sampling
Source: USFS

Proportional Size Distribution (Preferred), previously known as RSD (Relative Stock Density) for bluegill equal to or greater than 200 mm (7.9 inches) long, shows relatively few catches of Bluegill above that size but with a slightly increasing trend line that is also not statistically significant. The pooled 2016 catch for preferred-size Bluegill is near the norm for the past 25 years.

Bluegill Catch/Hour and Quality and Preferred Size Distribution by Year (electrofishing), ONF



As sampled in all years through 2016, given the above constraints and conditions, Bluegill populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question.

Recommendation:
Apparently, the time required for year-end accomplishment reporting results in reduced fall sampling which reduces the catch of larger Bluegill (and Redear Sunfish). Spring sampling, as noted above, is missing the larger of the spawning sunfish. It is recommended that a review of optimal sampling times be undertaken. This could be accomplished either by selecting

representative lakes such as North Fork and/or Dry Fork Lakes and sampling them every other week later into spring to determine if the schedule of electrofishing should be moved to pinpoint the spawning Bluegill and Redear Sunfish while not seriously impacting the Largemouth Bass catches or alternatively, by undertaking more fall sampling, probably later in the fall. The past few years, larger sunfish schooling around deeper structure have not been collected, possibly indicating that cooler temperatures are needed to return to the pattern of locating larger sunfish to maintain continuity with prior sampling. Temperature/weather patterns are changing and experimentation with sample timing is needed to get more consistent and representative samples. This need does not invalidate conclusions drawn from current and prior sampling due to the extensive experience of the former Forest Fisheries Biologist; however, overall sampling efficiency needs to be improved.

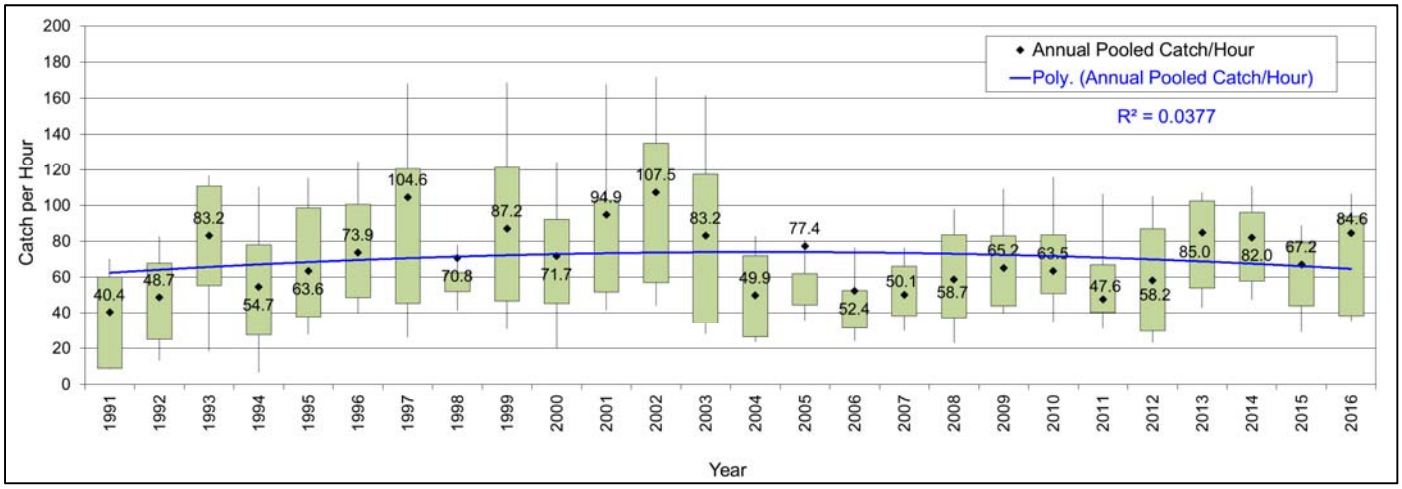
Largemouth Bass *(Micropterus salmoides)*

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The largemouth bass electrofishing catch rate in 2016 sampling was the highest in the last 2 years of sampling and near the average of 2013. Trends are not statistically significant. Sampling results from the last 25 years are shown in the graph below.

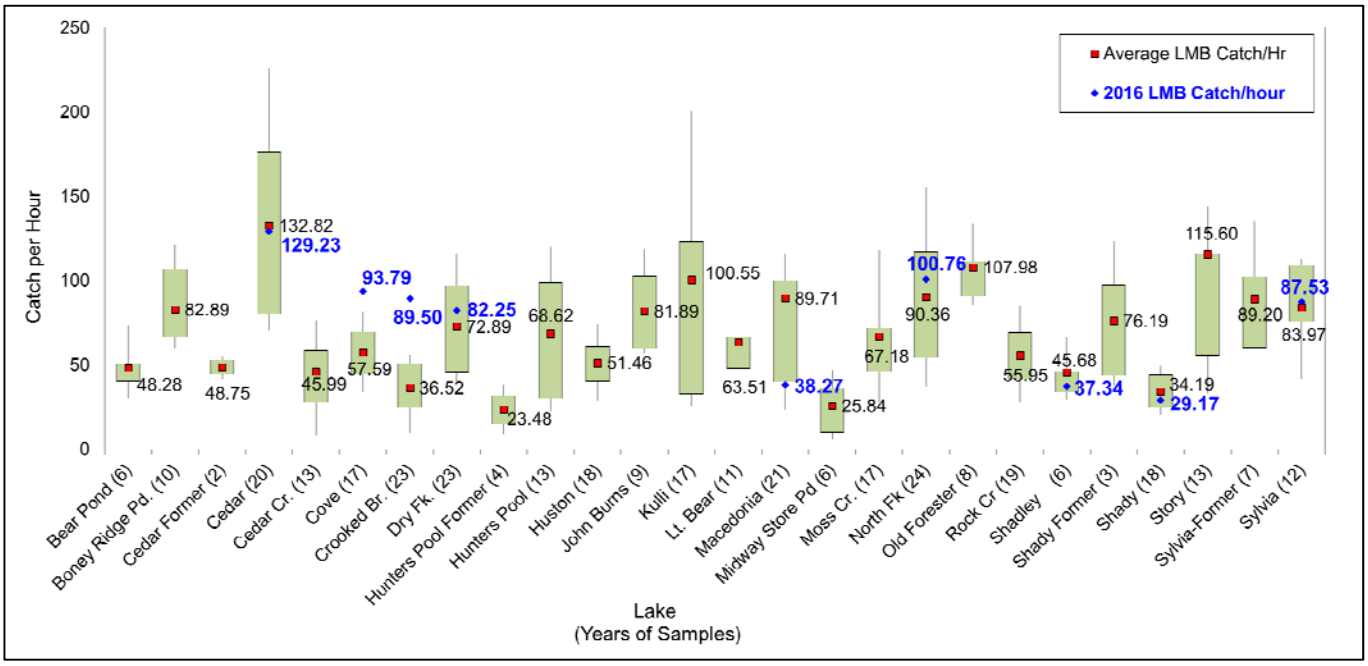
Largemouth Bass
Source: Rich Standage, USFS

Annual Pooled Largemouth Bass Catch per Hour (electrofishing), ONF



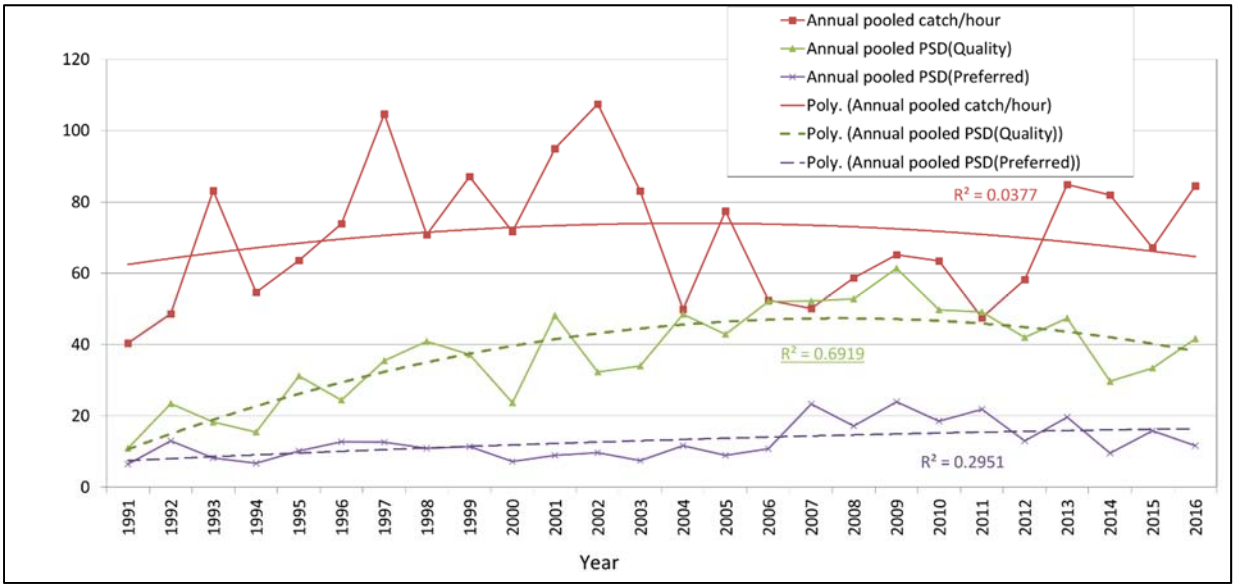
As shown in the graph below, results from most waterbodies showed 2016 catches of bass that were within the 25-75 percent range box with Cove and Crooked Branch being above the 90% average and Macedonia being in the 10% level. Much variability is shown in the 2016 bass catch across the lakes and ponds sampled.

Largemouth Bass Catch per Hour by Lake (electrofishing), ONF



Harvestability of quality-sized largemouth bass (PSDQ) increased from 2014 and 2015, but was not as quite as high as its 2013 level. Overall there is a slight decreasing trend in harvestability of quality-sized bass as shown in the graph below. Quality bass are those equal to or larger than 300 mm (11.8 inches) and the stock size is 200 mm (7.9 inches).

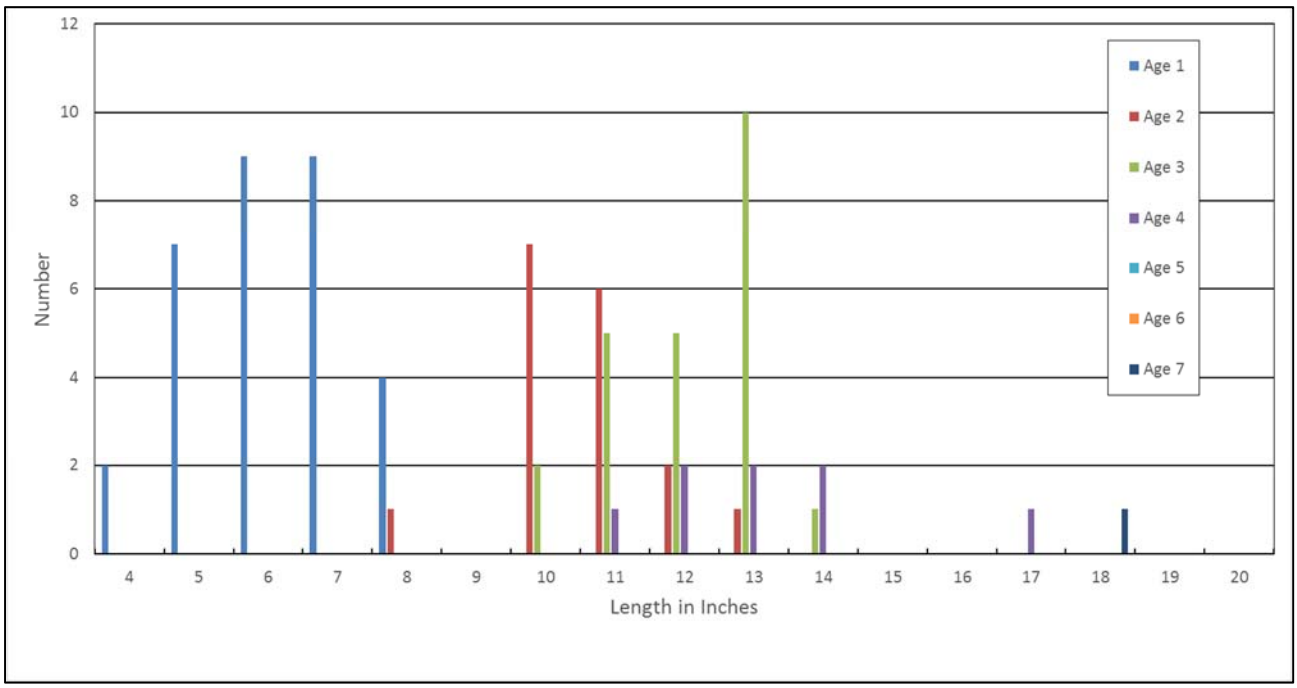
Proportional Size Distribution, Quality and Preferred for Largemouth Bass by Year (electrofishing), ONF



As part of a joint Forest Service, AGFC and Dr. Jess Kelly, OBU professor, study of Largemouth Bass age and growth at North Fork Lake continued for a second year. Seventy bass were studied in 2016 to determine their age at length. Results of length and age of the 2016 captured bass are shown below. Results are similar to those in 2015, indicating that there are no growth issues rather an issue of bass

being heavily harvested at 11-12 inches with few making it beyond that size. However, if they escape harvest at the smaller size, they continue to grow well. While length limits might be able to shift harvest to larger bass, enforcement of any regulation change could be problematic, and there has not been any angler criticism of the existing situation.

Ages at Length, Largemouth Bass, North Fork Lake, 2016, ONF



As sampled in 2016, Largemouth Bass populations across the Ouachita NF are at suitable and sustainable levels, and their viability is not in question.

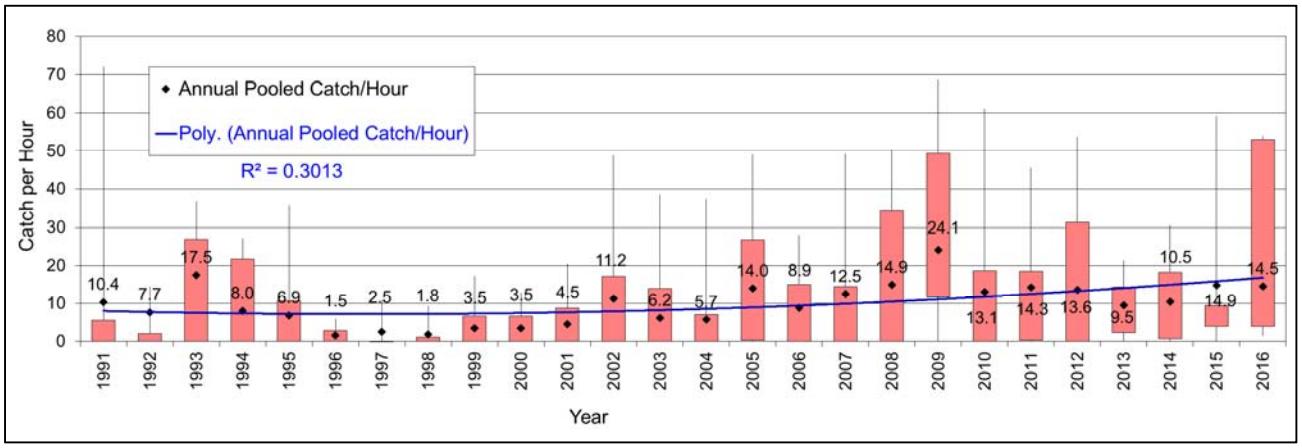
Redear Sunfish *(Lepomis microlophus)*

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The redear sunfish electrofishing catches have ranged from 4 to 90 times less than bluegill or largemouth bass catches over the past 26 years. As shown in the graph below, the redear sunfish catch in 2016 is the fifth highest annual catch of redear sunfish to date. While the redear sunfish annual pooled catch rate trend line shows an increase since 1996, the trend has low statistical significance.

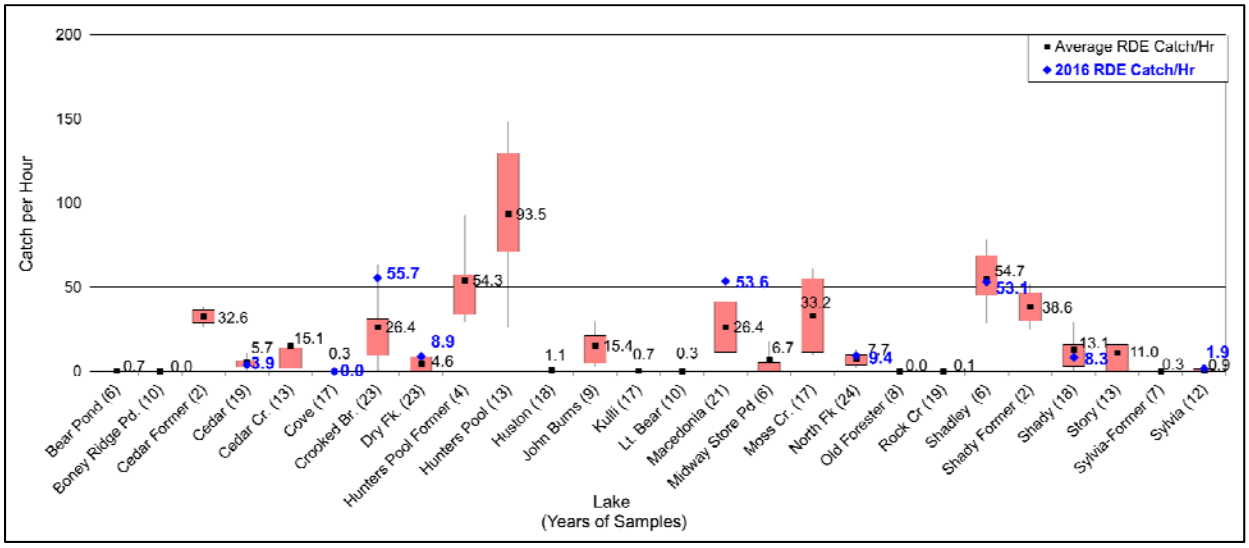
Redear Sunfish
Source: Rich Standage, USFS

Annual Pooled Redear Sunfish Catch per Hour (electrofishing), ONF



In 2016, redear catch was highest at Crooked Branch Lake, Macedonia Pond and Shadley Lake as shown in the figure below. Five of the waterbodies had 2016 results above their average annual redear catch per hour, 4 were below average, and 1 of the sampled waterbodies had zero catch of Redears for 2016 where Redears had been caught before.

Redear Sunfish Catch per Hour by Lake (electrofishing), ONF



Harvestability of Redear Sunfish utilizes a stock length of 100 mm (3.9 inches) and a quality length of 180 mm (7.1 inches). For 2016 quality size Redear Sunfish harvestability was higher than 2015, but lower than any other year since 2008. For the larger, preferred-size redear sunfish (230 mm or 9 inches), 2016 PSD(P) was lower than 2013 and 2014, but higher than 2015. The trend line is not statistically significant for either the quality or the preferred-size redear sunfish.

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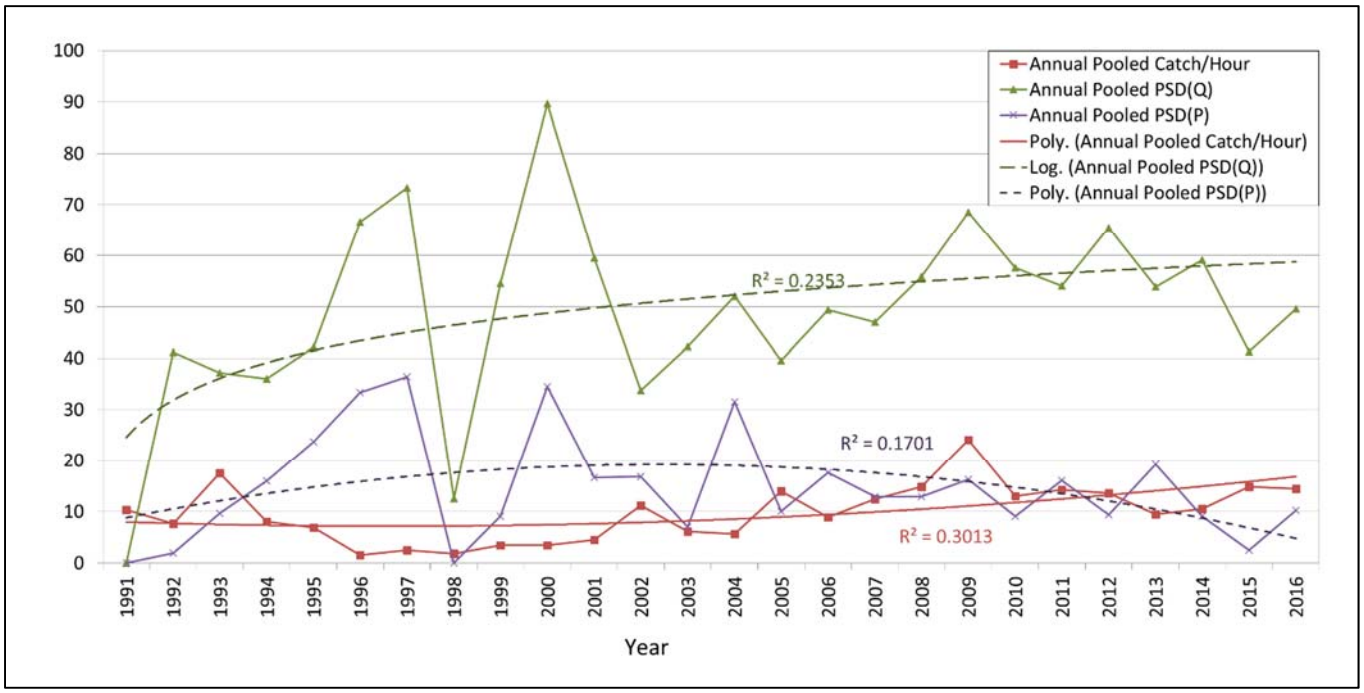
Quality and Proportional Size Distribution for Redear Sunfish by Year (electrofishing), ONF



As sampled in 2016, the redear sunfish populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question.

Other Pond, Lake, and Waterhole Species

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

In addition to the pond, lake, and waterhole MIS species, additional sampling of pond, lake, and waterhole species is conducted to determine catch and harvestability rates of other game fish or to assess potential hazards to sustainable sport fisheries. While the White Crappie population was followed for years at Dry Fork Lake due to its cyclic nature, the population is stable and past trends continue; thus Dry Fork's White Crappie have been dropped from further discussion in Monitoring Reports. The data is contained within the Dry Fork sampling results since all species and sizes are caught and recorded for each lake and pond electrofishing sample. Likewise, Threadfin Shad, that suddenly appeared in the North Fork sampling efforts in 2006, but disappeared in 2009 and have not been found since, have been dropped from this Report. Intensive management of Gizzard Shad at Cedar Lake, Oklahoma, continues, and it will continue to be analyzed in this report should this management and sampling continue.

Gizzard Shad *(Dorosoma cepedianum)*

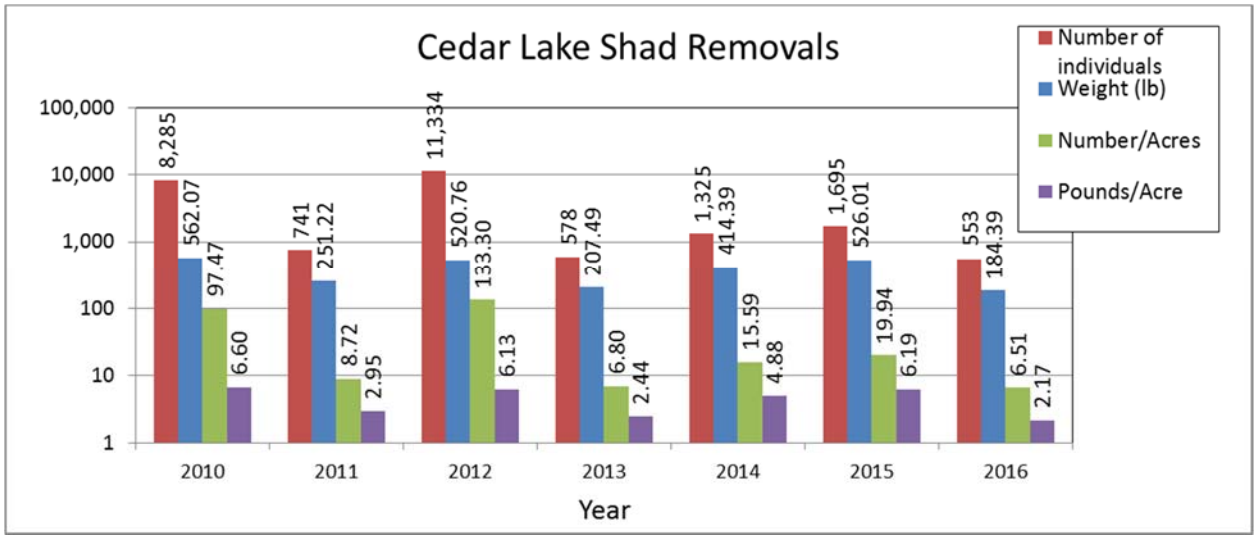
For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Gizzard Shad
Source: Rich Standage, USFS

There has been a concern that the Gizzard Shad population might be expanding in Cedar Lake to the detriment of the sport fishing species. Gill netting was first conducted in the fall of 2005 in Cedar Lake to monitor the Gizzard Shad population. Two 200-foot monofilament nets, sized specifically to capture these shad and minimize Largemouth Bass catches were utilized in 2006 for the first time, and their use continued through 2013. In 2014, 2 additional and identical nets were set to try to increase the Gizzard Shad sample size and to better sample the open, deeper waters of Cedar Lake.

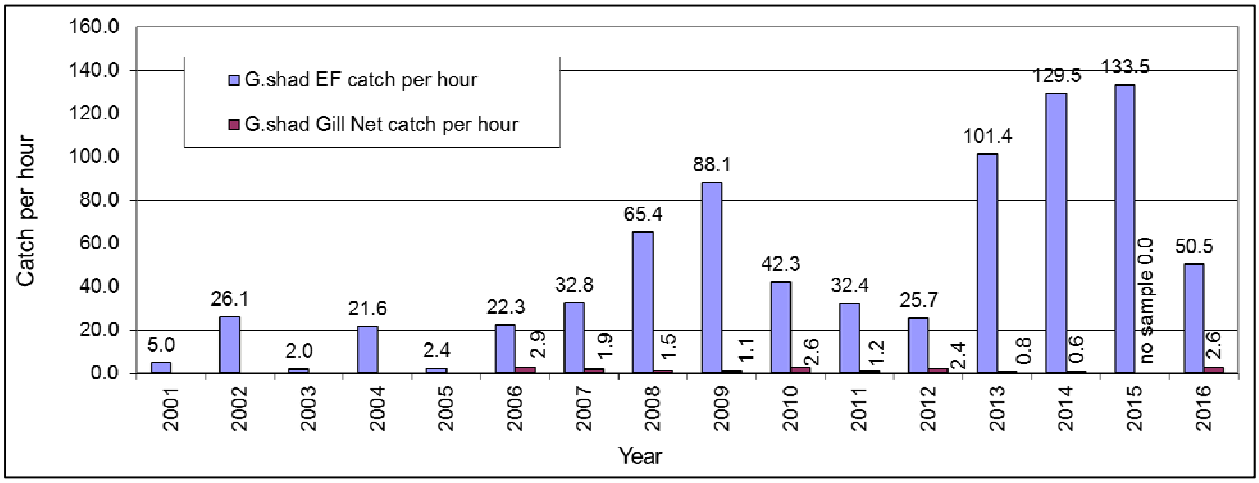
Efforts to reduce the number of larger Gizzard Shad continue. For 2016, about 184 pounds of Gizzard Shad were removed consisting of 553 individuals or 6.51 shad per acre or 2.17 pounds per acre. The 2016 number per acre is the smallest recorded since the beginning of this management measure. Due to apparent success in removing the larger shad, this removal work has continued with usually one USFS boat and two ODWC boats with various quantities of Gizzard Shad removed (see the following graph). The fall netting results of more numerous and smaller shad in most years is believed to be the result of management removal efforts.

Cedar Lake Gizzard Shad Removals, ONF/ODWC (electrofishing)



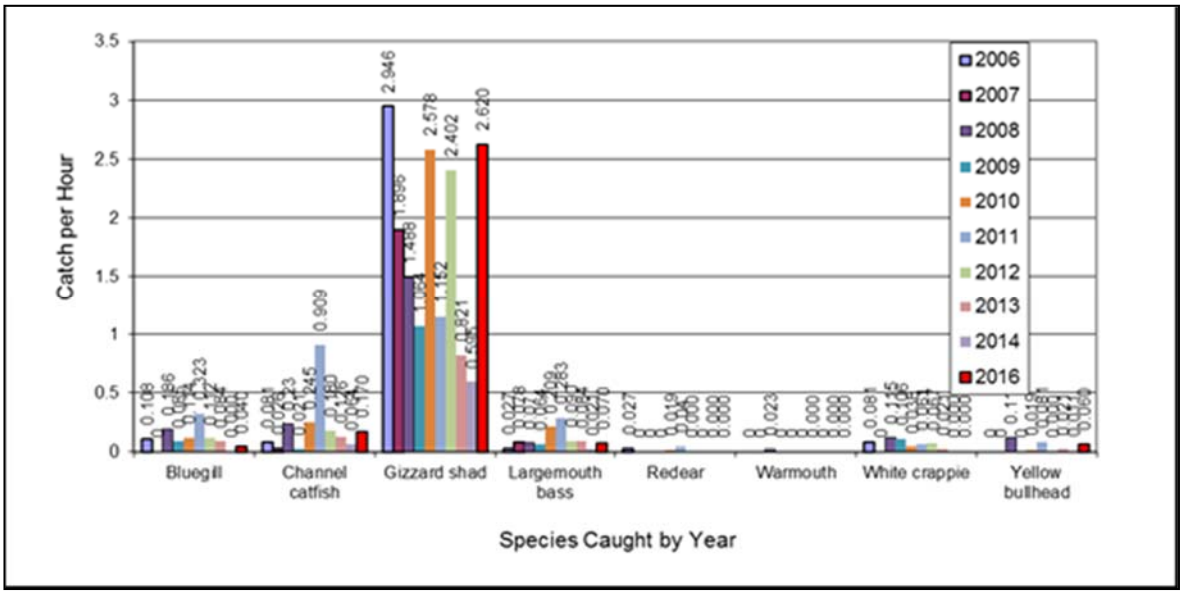
The Cedar Lake electrofishing catch per hour for Gizzard Shad in 2016 is lower than the previous 3 years, by half or more; however at 50.5 per hour the catch rate is more consistent with years 2007 – 2011. Catch result differences could well be the result of missing or hitting spawning season of Gizzard Shad when they come into the shoreline to spawn along vegetation and are more vulnerable to electrofishing. The 2016 gill netting results are tied for the second highest of the years sampled. Differences in lake/gill net visibility and water temperatures influencing the amount of movement of fish will have an influence on the numbers of fish caught in gill nets. Based on these results, it appears the large shad should continue to be targeted for a reduction program to promote production of the smaller Gizzard Shad and continue as long as results seem worth the effort. Manpower availability for these intensive efforts will also be a factor in whether or not these efforts can continue

Cedar Lake Gizzard Shad Catch per Hour per Year, Combined Nets, ONF



Using gill nets, it is clear that Gizzard Shad is by far the most susceptible species with little by-catch of desirable game fish. Gill netting should continue as long as the shad reduction work continues to determine the effectiveness of the reduction.

Cedar Lake Gill Net Captures by Species by Year, ONF/ODWC
(2 Nets all years with 4 nets in 2014 and 2016)



Shoreline Seining

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Shoreline seining was conducted, or at least attempted, in approximately 15 instead of the normal 33 lakes and ponds across the Ouachita NF in 2015. The AGFC stopped shoreline seining because a study they commissioned showed seining results did not adequately represent fall recruitment of Largemouth Bass. The Forest Fisheries Biologist, after reviewing the study, did not fully concur with the decision to halt a practice for which 25 plus years of data existed. Instead, a vastly reduced number of easily seined lakes and ponds was chosen to maintain some continuity in lake and pond reproduction monitoring. ODWC concurred with continuing to seine most of the Oklahoma lakes and ponds (Cedar and Crook Branch Lakes and Hunters Pool) previously sampled, but Boney Ridge and the other ponds were dropped due to the difficulty in seining them and getting an adequate sample.

Reducing the sampling effort is still giving an adequate representation of reproductive success of bass and sunfish with considerable labor savings.

Pond, Lake and Waterhole MIS and Other Species Summary and Conclusions

Summary of Pond, Lake, and Waterhole Management Indicator Species Monitoring, ONF
Data are from the 2010 Species Viability Evaluation

Pond, Lake and Waterhole Management Indicator Species					
Common Name	**Scientific Name**	**Trend, Proportional Size Distribution Quality**	**Trend, Proportional Size Distribution Preferred**	**Risk for Conservation of Species**	**Management Changes Needed**
Bluegill	***Lepomis macrochirus***	**Not Significant, Slightly Increasing**	**Not Significant, Slightly Increasing**	**Sustainable-Viability not in Question**	**None**
Largemouth Bass	***Micropterus salmoides***	**Significant, Increasing**	**Barely Significant, Slightly Increasing**	**Sustainable-Viability not in Question**	**None**
Redear Sunfish	***Lepomis microlophus***	**Not Significant, Slightly Increasing**	**Not Significant, Slightly Decreasing**	**Sustainable-Viability not in Question**	**None**

The following pond and lake electrofishing information captures information from 183 individual electrofishing samples over the period 2006 – 2016. The entire dataset includes data back to 1991 and reflects 399 individual electrofishing episodes which are used in these analyses. These data do not count gill netting samples. The data for North Fork Lake represents a cooperative relationship that extends for 15 years and includes 49 outings with Ouachita Baptist University students led by Dr. Jim Taylor.

Electrofishing Samples by Pond and Lake, ONF

Lake	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Totals	Lake	Admin Unit
Bear Pond	1	1	1	ns	1	1	1	ns	ns	ns	ns	6	Bear Pond	M/O
Boney Ridge Pond	1	1	1	ns	1	1	ns	1	1	ns	ns	7	Boney Ridge Pond	OK
Cedar	1	1	1	1	1	1	1	1	1	1	1	11	Cedar	OK-net
Cedar Cr	1	1	1	1	1	1	1	ns	ns	1	ns	8	Cedar Cr	
Cove	1	ns	1	ns	1	ns	ns	ns	1	ns	1	5	Cove	ATU
Crooked Br	1	1	1	1	1	1	1	ns	1	1	1	10	Crooked Br	
Dry Fork	1	1	1	1	1	ns	1	1	1	1	2	11	Dry Fork	JWF&ATU
Hunter's Pool	1	1	1	1	1	1	1	ns	1	ns	ns	8	Hunter's Pool	Tiak-OK
Huston	1	ns	1	ns	1	ns	1	ns	ns	1	ns	5	Huston	
John Burns Pond	ns	1	ns	1	ns	1	ns	1	ns	ns	ns	4	John Burns Pond	
Kulli	ns	1	1	ns	1	ns	ns	ns	1	ns	ns	4	Kulli	
Little Bear	ns	1	ns	1	ns	1	ns	ns	ns	ns	ns	3	Little Bear	
Macedonia Pond	1	1	1	1	1	1	1	1	1	ns	1	10	Macedonia Pond	M/O
Midway Store Pond	ns	ns	1	ns	ns	ns	ns	ns	ns	ns	ns	1	Midway Store Pond	OK
Moss Creek Pond	1	1	1	1	1	1	1	ns	1	ns	ns	8	Moss Creek Pond	JWF
North Fork (SF#3)	4	3	3	3	3	3	4	3	3	3	4	36	North Fork (SF#3)	OBU
Old Forester Pond	ns	1	ns	ns	1	ns	1	ns	1	ns	ns	3	Old Forester Pond	
Rock Cr	ns	1	ns	1	ns	1	ns	ns	1	ns	ns	4	Rock Cr	
Shadley	ns	ns	ns	1	1	1	1	ns	ns	ns	1	5	Shadley	P/CS
Shady Lake	1	1	1	1	1	3	2	2	1	1	2	16	Shady Lake	M/O
Story Pond	ns	1	2	1	ns	ns	1	ns	2	ns	ns	7	Story Pond	
Sylvia	1	1	1	1	1	1	1	ns	1	1	1	10	Sylvia	JWF
Yearly totals	17	20	20	17	19	19	19	10	18	10	14	183	Yearly totals	
ns= no sample							check total					183		

Stream and River MIS

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

There are 14 species of fish associated with stream and river habitat. Monitoring for 12 species is conducted every 5 years utilizing a Basin Area Stream Survey along with annual data from long-term permanent stream monitoring sites. Data for the Johnny and Channel Darters are collected annually during the annual leopard darter monitoring conducted jointly with the US Fish and Wildlife Service. Monitoring for these MIS is to determine how well the stream and river aquatic habitat condition are being protected, enhanced or maintained.

Basin Area Stream Surveys

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The Basin Areas Stream Survey (BASS) was developed in an effort to detect impacts of timber harvest activities by making direct comparisons of physical, biological, and chemical attributes between reference and managed conditions within the Ouachita National Forest. Beginning in 1990, six streams were selected and paired based upon their ecoregions: Dry and Jack Creeks; Alum and Bread Creeks; and Caney and Brushy Creeks. Early evaluations of the data failed to detect differences between managed and reference conditions. In 1998, two additional streams were added to the BASS survey to examine the effects of off-highway vehicle (OHV) on those two streams: Board Camp and Gap Creeks. Each stream-pair was identified in each of the following ecoregions across the Forest: Arkansas River Valley, Upper Ouachita Mountain, and Lower Ouachita Mountain. The Basin Area Stream Survey (BASS) is designed and conducted to assess cumulative effects from silviculture activities on aquatic biota. Each stream-pair consists of a reference watershed (usually a wilderness) and a managed watershed (an adjacent watershed with typical forest management). The inventory consists of physical habitats within the stream and a subsample of fish, macro- invertebrates, chemistry, and water flow. The surveys were repeated for the first 3 years to provide a baseline dataset, and they are now repeated approximately every 5 years. Data analysis and summaries can be found in USDA Forest Service, Ouachita National Forest (1994) and Williams et.al (2002, 2003 and 2004). Smaller stream segments (usually only four habitats) are sampled across the Forest using the same methodology.

Stream Pairs by Watershed and other Characteristics

STREAM	LENGTH (km)	AREA (ha)	RELIEF (m)	GRADIENT	HUC 8 WATERSHED
Dry Creek (R)	9.1	2,518	495	0.055	Petit Jean
Jack/Ramsey Creek (M)	7.0	3,428	458	0.067	Petit Jean
South Alum Creek (R)	7.7	1,533	122	0.016	Upper Saline
Bread Creek (M)	8.5	1,517	183	0.020	Upper Saline
Caney Creek (R)	13.5	2,170	326	0.025	Lower Little
Brushy Creek (M)	8.8	2,938	299	0.035	Lower Little
Board Camp (OHV)	11.1	2,295	180	0.016	Ouachita Headwaters
Gap (OHV)	5.5	1,425	180	0.033	Ouachita Headwaters

The following is a compilation of streams surveyed, the years of the survey, the years reports were prepared and dates (2013) of separate specialized analysis.

Years of stream surveys using BASS methods on the Ouachita National Forest, 1990-2016

Stream	90	91	92	94	96	98	01	06	11	12	13	16	17
Dry	X	X	X	R	X		X	X	X	R	C	X	R
Jack	X	X	X	E	X		X	X	X	E	A	X	E
Alum	X	X	X	P	X		X	X	X	P	T	X	P
Bread	X	X	X	O	X		X	X	X	O	T	X	O
Caney	X	X	X	R	X		X	X	X	R		X	R
Brushy	X	X	X	T	X		X	X	X	T		X	T
B' Camp						X	X	X	X			X	
Gap						X	X	X	X			X	

In the tabulation below, species collected from the Ouachita NF during BASS sampling (Caney/Brushy and Board Camp/Gap Creeks), 1990-2016 an X indicates that the fish is present. Classifications in the BASS and the 2012 report as benthic (B) or intolerant (DC) are also noted.

Common Name	Family	Species	Caney	Brushy	Bd. Camp	Gap	Benthic	Intolerant
Northern Hog Sucker	Catostomidae	*Hypentilium nigricans*			X	X	D	DC
Shadow Bass	Centrarchidae	*Ambloplites ariommus*			X			DC
Green Sunfish	Centrarchidae	*Lepomis cyanellus*	X	X	X	X		
Bluegill	Centrarchidae	*Lepomis machochirus*	X	X		X		
Longear Sunfish	Centrarchidae	*Lepomis megalotis*	X	X	X	X		
Spotted Sunfish	Centrarchidae	*Lepomis punctatus*			X			
Smallmouth Bass	Centrarchidae	*Micropterus dolomieu*	X	X	X	X		DC
Spotted Bass	Centrarchidae	*Micropterus punctulatus*		X		X		
Largemouth Bass	Centrarchidae	*Micropterus salmoides*		X		X		
Highland Stoneroller	Cyprinidae	*Campostoma spadiceum*	X	X	X	X	D	
Creek Chubsucker	Cyprinidae	*Erimyzon oblongus*	X	X	X	X	D	
Striped Shiner	Cyprinidae	*Luxilus chrysocephalus*	X	X	X	X		#
Ouachita Mountain Shiner	Cyprinidae	*Lythrurus snelsoni*	X	X				D

Redfin Shiner	Cyprinidae	*Lythrurus umbratilis*	X	X	X	X		C
Bigeye Shiner	Cyprinidae	*Notropis boops*	X	X	X	X		DC
Kiamichi Shiner	Cyprinidae	*Notropis ortenburgeri*			X	X		DC
Bluntnose Minnow	Cyprinidae	*Pimephales notatus*		X	X	X		
Creek Chub	Cyprinidae	*Semotilus atromaculatus*	X	X	X	X		
Grass Pickerel	Escocidae	*Esox americanus*		X				
Northern Studfish	Fundulidae	*Fundulus catenatus*	X	X	X	X		DC
Blackspotted Topminnow	Fundulidae	*Fundulus olivaceus*	X	X		X		
Yellow Bullhead	Ictaluridae	*Ameiurus natalis*	X	X	X	X		
Slender Madtom	Ictaluridae	*Noturus exilis*		X	X	X	DC	DC
Ouachita Madtom	Ictaluridae	*Noturus lachneri*			X *		D	D
Freckled Madtom	Ictaluridae	*Noturus nocturnus*			X	X	DC	
Greenside Darter	Percidae	*Etheostoma blennoides*			X	X	DC	DC
Creole Darter	Percidae	*Etheostoma collettei*		X			D	
Orangebelly Darter	Percidae	*Etheostoma radiosum*	X	X	X	X	DC	DC
Redfin Darter	Percidae	*Etheostoma whipplei*	X	X		X	DC	C
Orangethroat Darter	Percidae	*Etheostoma spectabile*	X	X			D	
Logperch	Percidae	*Percina caprodes*			X	X	D	
Southern Brook Lamprey	Petromyzontidae	*Ichthyomyzon gagei*			X		D	C
Total species for each Stream			17	23	23*	24	13(5)	11 (12)
Total Intolerants			5(6)	6(7)	10(11)	8(10)		
Total Benthic Insectivores			5(2)	7(3)	10*(4)	9*(5)		

***As of 2016, we believe that the Ouachita Madtom, *Noturus lachneri*, was mis-identified during the 2006 survey. These fish were likely Slender Madtom, *N. exilis* and the indicated numbers should be reduced accordingly. There is no credible record of *N. lachneri* located above the Remmel Dam on the Ouachita River.**

 # Though not noted here, Clingenpeel (2012) included Striped Shiner, *Luxilus chrysocephalus*, among the list of intolerant species for calculations in his report (Clingenpeel, 2017).

Percentages of the most dominant fish in four streams for all years (1990-2016)

STREAM	YEAR	HSR	OBD	CC	SS	LES	NSF
Caney Creek	1990	33%	21%	26%	6%	6%	1%
Caney Creek	1991	27%	27%	27%	7%	4%	1%
Caney Creek	1992	30%	18%	28%	5%	10%	1%
Caney Creek	1996	24%	24%	30%	4%	7%	1%
Caney Creek	2001	26%	35%	13%	2%	10%	1%
Caney Creek	2006	31%	12%	23%	10%	11%	1%
Caney Creek	2011	30%	10%	33%	12%	9%	0%
Caney Creek	2016	17%	13%	58%	2%	3%	0%
Brushy Creek	1990	27%	18%	14%	4%	12%	3%
Brushy Creek	1991	32%	11%	37%	1%	8%	1%

Brushy Creek	1992	34%	14%	20%	5%	11%	3%
Brushy Creek	1996	33%	23%	12%	0%	6%	1%
Brushy Creek	2001	43%	17%	13%	1%	8%	4%
Brushy Creek	2006	50%	12%	14%	6%	10%	4%
Brushy Creek	2011	55%	16%	3%	4%	8%	4%
Brushy Creek	2016	32%	23%	20%	4%	7%	5%
Board Camp Creek	1998	46%	16%	5%	9%	8%	4%
Board Camp Creek	2001	64%	7%	3%	5%	10%	3%
Board Camp Creek	2006	69%	2%	1%	8%	9%	2%
Board Camp Creek	2011	54%	5%	7%	14%	9%	3%
Board Camp Creek	2016	35%	15%	11%	11%	7%	5%
Gap Creek	1998	28%	14%	17%	10%	7%	0%
Gap Creek	2001	51%	13%	12%	6%	8%	1%
Gap Creek	2006	37%	3%	18%	13%	16%	1%
Gap Creek	2011	37%	17%	15%	13%	8%	1%
Gap Creek	2016	26%	15%	25%	25%	2%	1%

HSR: Highland Stoneroller (*Campostoma spadiceum*); OBD: Orangebelly Darter (*Etheostoma radiosum*); CC: Creek Chub (*Semotilus atromaculatus*); SS: Striped Shiner (*Luxilus chrysocephalus*); LES: Longear Sunfish; and NSF: Northern Stud Fish (*Fundulus catenatus*)

A result of the 2016 Basin Area Stream Survey notes that values below 1.635 (all values) indicate a null result to the question of significant difference between stream pairs.

Chi square test results for habitat-type group frequency for 1990-2016 data.

Analysis sample sets	X^2 statistic for frequency of major habitat classes		
	#Pools/km	#Riffles/km	#Runs/km
Jack/Dry	0.786	0.001	0.120
Bread/S. Alum	0.145	0.161	0.000
Brushy/Caney	0.000	0.000	0.003
Gap/Caney	0.019	0.492	0.001
Board Camp/Caney	0.557	0.501	0.089
Managed/Reference	0.916	0.246	0.541

2008 MIS Update

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The last update to the Management Indicator Species document was November 2008 to reflect the 2006 BASS inventory and annual stream inventory data. The last MIS report is available at the following location: www.fs.usda.gov/ouachita under Land and Resource Management – Planning. No additional updates to Management Indicator Species have been made to reflect the 2011 or the 2016 BASS inventories; however the annual monitoring reports available at https://www.fs.usda.gov/main/ouachita/landmanagement/planning have summarized data for most MIS species.

Arkansas River Valley Stream MIS

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

There are 7 fish species identified as MIS for Arkansas River Valley Streams:

Highland Stoneroller	***Campostoma spadiceum***
Creek Chubsucker	***Erimyzon oblongus***
Green Sunfish	***Lepomis cyanellus***
Longear Sunfish	***Lepomis megalotis***
Pirate Perch	***Aphredoderus sayanus***
Redfin Darter	***Etheostoma whipplei***
Yellow Bullhead	***Ameiurus natalis***

Gulf Coastal Plain Stream MIS

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

There are 11 fish species identified as MIS for the Gulf Coastal Plain Streams:

Highland Stoneroller	***Campostoma spadiceum***
Green Sunfish	***Lepomis cyanellus***
Longear Sunfish	***Lepomis megalotis***
Orangebelly Darter	***Etheostoma radiosum***
Northern Studfish	***Fundulus catenatus***
Northern Hog Sucker	***Hypentilium nigricans***
Redfin Darter	***Etheostoma whipplei***
Smallmouth Bass	***Micropterus dolomieu***
Striped Shiner	***Luxilus chrysocephalus***
Johnny Darter (within the range of the leopard darter)	***Etheostoma nigrum***
Channel Darter (within the range of the leopard darter)	***Percina copelandi***

Four species—the Highland Stoneroller, Green Sunfish, Longear Sunfish, and the Redfin Darter—are common to both groups.

Johnny and Channel Darters *(Etheostoma nigrum and Percina copelandi)*

For additional information, contact Robert Bastarache at rbastarache@fs.fed.us

For the 10-year Review, as is common each year, the Johnny and Channel Darter data are taken from snorkel counts conducted at permanent monitoring sites for the threatened Leopard Darter. Each darter encountered during snorkeling is identified as to species, counted and recorded. Snorkeling of each transect is conducted by an experienced 5-member crew with the time recorded for each snorkeler at each site (experience level of the crew ranges from 10 to 25+ years). In this portion of this report, data are presented over a long horizon representing the duration of this sampling technique.

Johnny Darters: Johnny Darters are more typically found over fine gravel and sand substrates whereas Channel Darters prefer coarser cobble and boulder substrates (R. Standage, personal observations). Shifts in species distribution have been compared to shifts in substrate observations in an effort to establish a relationship; however, after examining the variability in the numbers of the 2 species and substrate observations at the individual sites over many years, there is no discernable correlation between species numbers and habitat types. It is obvious that there are more influences than just substrate differences occurring at the site, drainage and regional/climatic levels. Fewer and smaller flushing storm events than normal occurred during winter 2004/2005, followed by an extremely dry summer with lots of silt and detritus buildups observed and noted in the survey records. The winter of 2005/2006 was wet with numerous spates that cleaned substrates, but it was followed by a dry summer that set numerous low flow records. The winter 2006/2007 was also wet and led into a wet spring/early summer that showed good darter recruitment. The 2005 Johnny and Channel darter pooled counts/minute data showed a large increase in Johnny Darter counts. This may be the result of low winter flows leaving more suitable spawning substrate that resulted in more reproduction, less flushing of post-hatch Johnny Darters from suitable rearing habitat, and/or better summer foraging habitat. Over the same time period, channel darters show a slight increase across the sampled drainages from 2005 to 2006, which could possibly be in response to the 2005/2006 winter's flushing flows coarsening the substrate.

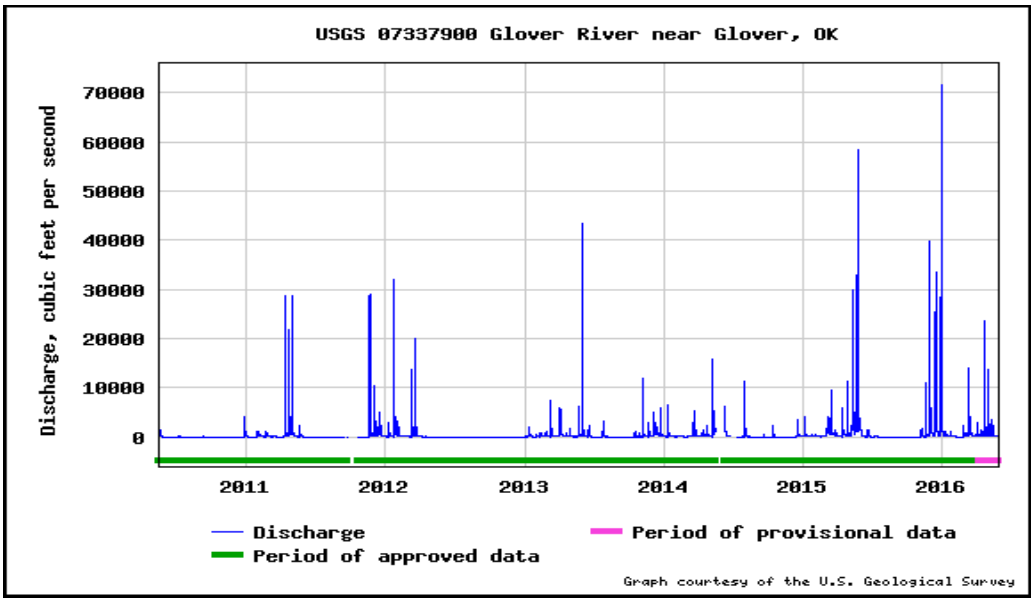
Johnny Darter
Source: Rich Standage, USFS

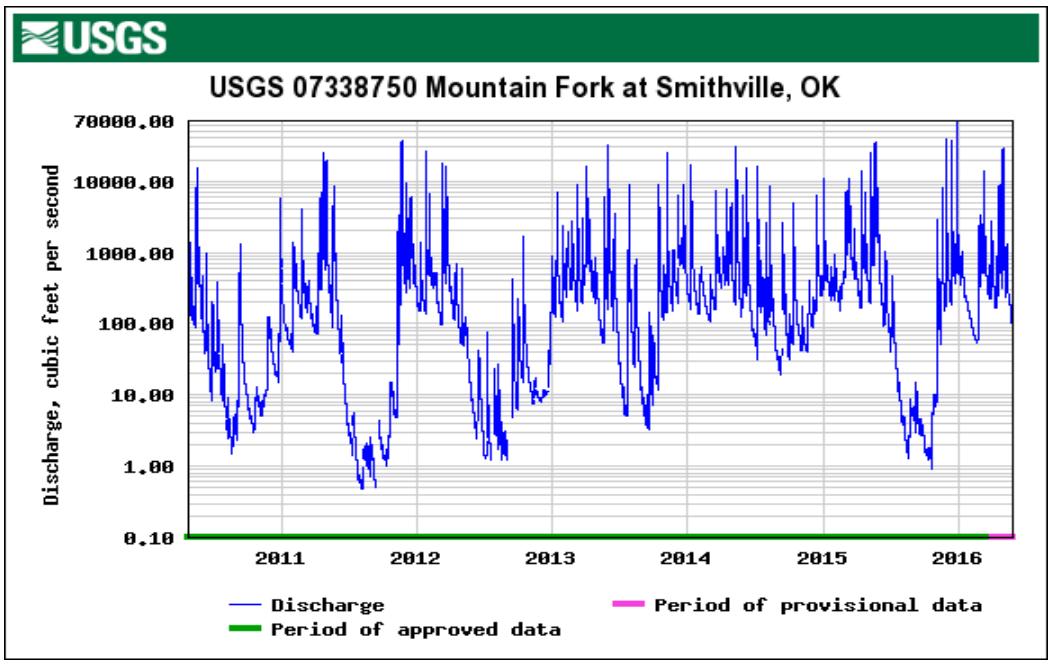
Both species show recovery in 2007, particularly Channel Darters, possibly because of continuing improvement in spawning conditions due to flushing flows. In 2008, there were a number of flushing flows (February - early April) that may have flushed eggs and larval darters out of their ideal hatching and rearing habitat and caused lower population levels during the summer of 2008. In the winter of 2008/2009, even more significant storms lasted through the spring of 2009 accompanied by a high likelihood of flushing eggs and larvae out of ideal habitats. Streamflow conditions the winter of 2009/2010 and through the spring were more conducive to better recruitment for these darters with an upward trend for Johnny Darters and less of a drop in Channel Darter counts from prior years.

The winter of 2011 was fairly mild without much flooding, but heavy rains and flooding occurred in April and May followed by the sixth worst drought since 1921. Particularly for the Mountain Fork River drainage, 2014 was a very wet year (there were 3 weeks in July when it was not possible to conduct surveys due to high water/flooding). Three of the Upper Little River site counts could not be conducted due to poor visibilities from rain; however, the Upper Glover River was somewhat low, making for high visibilities and easier counting of the darters that were present.

Again, the early winter of 2015/2016 had some significant storms that would have cleaned the substrates for good spawning conditions. However, more significantly, note below in the stream flow graphs for the Glover and Mountain Fork, that the period of late winter to early spring had stable to diminishing flows that apparently were highly conducive to Leopard, Johnny and Channel Darter survival with increased counts shown during the summer 2016 counts.

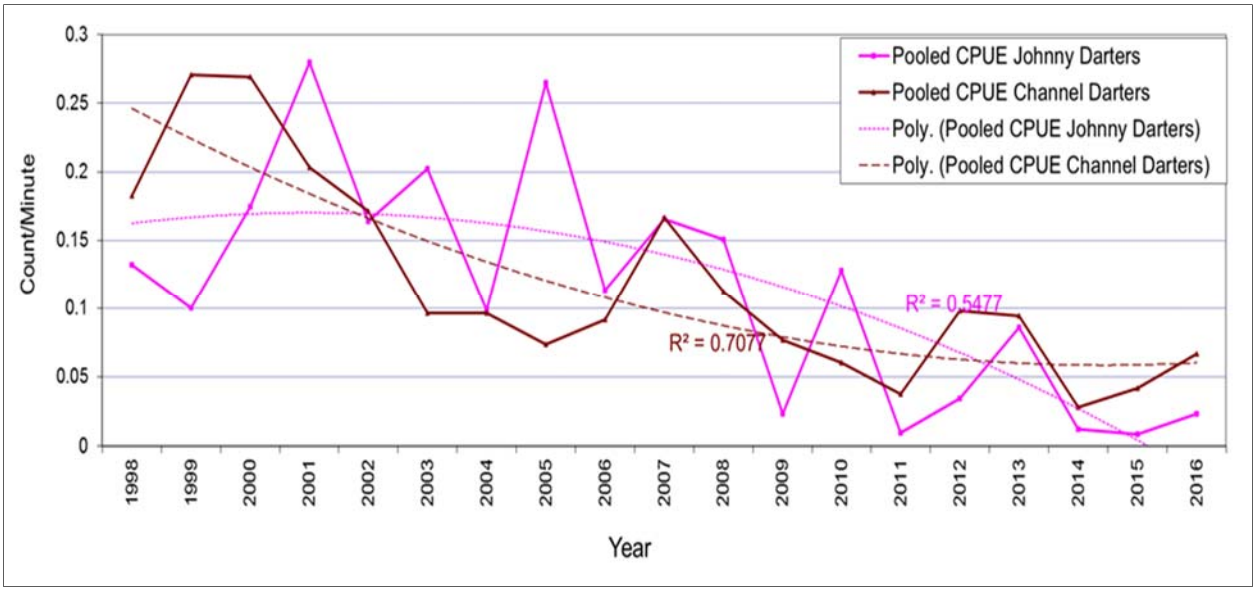
Stream Flow Records for the Glover and Mountain Fork Rivers, ONF at or near Permanent Sites by Year





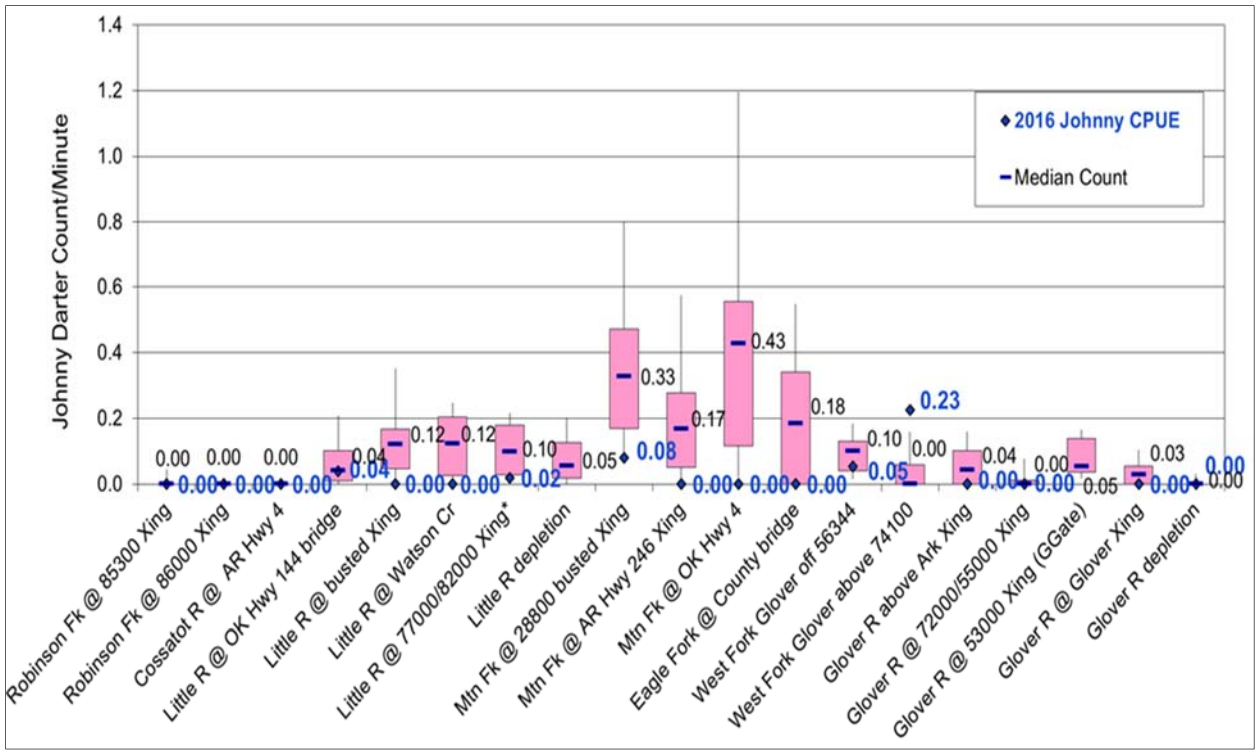
Overall trend lines for Johnny and Channel darters show a downward trend with a possible leveling off for the Channel Darters. Only the trend line for the Channel Darter is statistically significant but quite low (equivalent to the 70 percentile in accuracy/repeatability verse the 55 percentile for the trend line of the Johnny Darter).

Johnny and Channel Darter Annual Pooled Counts per Minute, ONF



Johnny Darter counts were generally quite low in 2012 with some improvement in 2013; then a large drop in 2014; and a slight further drop in 2015. Most of the 2014 drop is from not being able to do a number of the Mountain Fork River sites that traditionally have had the higher Johnny Darter numbers to pull up the annual pooled counts. In 2015, all sites but one were sampled. Johnny Darters show a recovery in 2016 though at a lesser rate than the other 2 darter species (Leopard and Channel Darters). Both 2012 and 2013 surveys were done during extremely dry conditions and 2014 was quite low flows in some places and flooded in others. The 2011-2014 period each had numerous high water events during the winter through the spring. In 2015, flooding in the spring was again experienced. Low water conditions, not seen in several years, existed from the summer into fall of 2015. Because of the variability between years and sites, several good water years without flushing flows during recruitment periods should result in higher numbers of Johnny Darters. The 2016 water year, with no late winter/early spring flooding, shows signs of a good recovery of all the darter species. However, counts of the Johnny Darters as seen at the individual sites only recovered at a few sites. One site had a count well above its median count and another had the same count as its median.

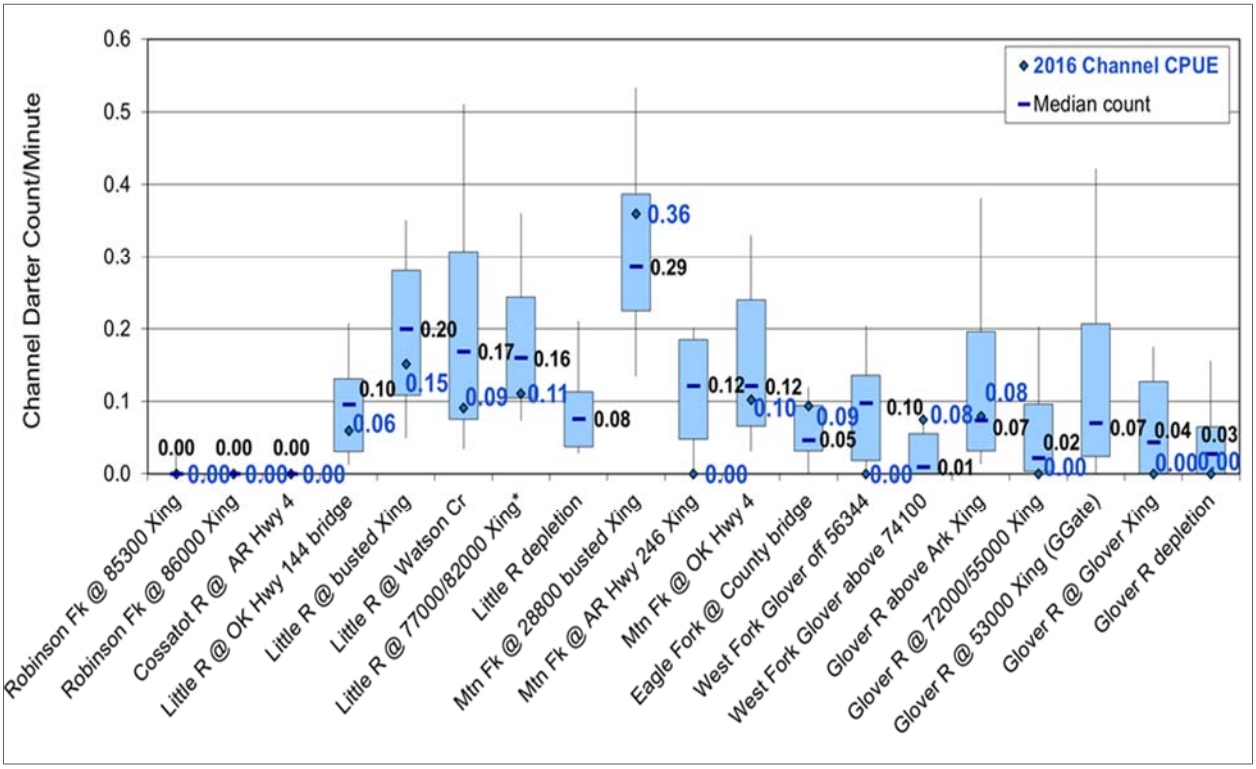
Johnny Darter Counts per Minute by Site, ONF



Channel Darter
Source: USFS

Channel Darters: For Channel Darters in 2014, the counts plummeted for the same reason as the numbers did for the Johnny Darter with many sites too flooded or too muddy to be able to snorkel and see anything underwater. However, conditions were much better in 2015 and all sites but one were surveyed with Channel Darter numbers showing a slight rebound. While the trend line for Channel Darters annual pooled counts is showing a bit of an upturn, it is due to the results of 2012 and 2013, which were up from prior years with 2015 up from the year before and 2016 up even further. Most individual sites that could be surveyed in 2015 had numbers near or below the median counts for that site with the exception of the Glover River depletion site and one of the new West Fork Glover sites (above road 74100) that had counts above their median long-term value. For 2016, four sites had counts above their median long-term counts.

Channel Darter Annual Pooled Counts per Minute, ONF



While the trends for both Johnny and Channel Darters look rather bleak, it is believed to be the result of the frequent and high intensity flooding of 2008/2009 with limited rebound in 2010, a good water year. High flows were experienced in April and May of 2011-2015 during juvenile growth periods, followed by droughts with low water conditions or the flooding in late 2014, and then, low water conditions in the summer and fall of 2015. While the populations of both species would be expected to rebound with more favorable conditions, Channel Darters did not respond as well as the Johnny Darters in 2010. Based on historic trends, the populations appear to fluctuate frequently with population numbers expanding and contracting. Channel Darter pooled counts have been low before (2005) and then rebounded for 2 years. The Johnny Darter pooled count for 2009 is the second lowest in the 17 years sampled; then made a sizeable rebound in 2010; but dropped again in 2011. Rebounds occurred in 2012 and 2013 for Johnny Darters, though counting in these 2 years may have been easier and a reflection of low water with higher than normal water clarity. Fluctuating populations seem to be the norm for these 2 species as with the Leopard Darter. Poor sampling conditions and the loss of several of the more productive (higher counts) sites worsened the counts for 2014. Low flows during the sampling period in 2015 and that more sites could be sampled may have helped slightly improve counts for both darters. As noted above, the 2015/2016 water year with no flooding during the darters spawning and larval recruitment periods, likely resulted in the increased counts for all three darter species in 2016. It may also be the case that spawning and recruitment of young Johnny and Channel Darters are just enough different that a few days difference in a flood event may not affect both species equally, possibly accounting for one species counts increasing while the other decreases. So little is known of spawning dates and recruitment periods that more in-depth conclusions cannot be made. Leopard Darters have been discovered to have declining genetic diversity issues due to isolation by federal reservoirs and stream crossing barriers preventing individual darters from

intermingling between river populations within the Little River drainage. There is potential that the same genetic issues could be occurring for these additional 2 species.

Stream and River Management Indicator Species Monitoring Summary, ONF

Stream and River Management Indicator Species					
Common Name	**Scientific Name**	**Expected Population Trends**	**Apparent Population Trends**	**Risk for Conservation of Species**	**Management Changes Needed**
Arkansas River Valley Streams					
Yellow Bullhead	*Ictalurus natalis*	Stable	Declining	Sustainable – Viability not in Question	Manage OHV use, maintain roads and trails
Pirate Perch	*Aphredoderus sayanus*	Stable	Stable	Sustainable – Viability not in Question	None
Central Stoneroller	*Campostoma anomalum*	Stable	Increasing	Sustainable – Viability not in Question	Manage OHV use, maintain roads and trails
Creek Chubsucker	*Erimyzon oblongus*	Stable	Stable	Sustainable – Viability not in Question	None
Orangebelly Darter	*Etheostoma radiosum*	Stable	Potentially Decreasing	Sustainable – Viability not in Question	Manage OHV use, maintain roads and trails
Redfin Darter	*Etheostoma whipplei*	Stable	Stable	Sustainable – Viability not in Question	None
Northern Studfish	*Fundulus catenatus*	Stable		Sustainable – Viability not in Question	None
Northern Hog Sucker	*Hypentelium nigricans*	Stable	Stable	Sustainable – Viability not in Question	None
Green Sunfish	*Lepomis cyanellus*	Stable	Increasing	Sustainable – Viability not in Question	Manage OHV use, maintain roads and trails
Longear Sunfish	*Lepomis megalotis*	Stable	Stable	Sustainable – Viability not in Question	None
Striped Shiner	*Luxilus chrysocephalus*	Stable	Stable	Sustainable – Viability not in Question	None
Smallmouth Bass	*Micropterus dolomieu*	Stable	Stable	Sustainable – Viability not in Question	None
Johnny Darter	*Etheostoma nigrum*	Stable	Stable	Sustainable – Viability not in Question	None
Channel Darter	*Percina copelandi*	Stable	Potentially Decreasing	Sustainable – Viability not in Question	None

Aquatic Dependent Proposed, Endangered, and Threatened Species and their Habitat

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

There are 7 freshwater mussel species, one fish species, and one aquatic plant species that are listed as federally threatened or endangered.

Federally Endangered or Threatened Aquatic Species, ONF

Common Name	Scientific Name	Viability Concern
Mussels		
Pink Mucket*	*Lampsilis abrupta*	Federally Endangered
Winged Mapleleaf*	*Quadrula fragosa*	Federally Endangered
Scaleshell	*Leptodea leptodon*	Federally Endangered
Ouachita Rock-pocketbook*	*Arkansia wheeleri*	Federally Endangered
Spectaclecase	*Cumberlandia monodonta*	Federally Endangered
Arkansas Fatmucket	*Lampsilis powellii*	Federally Threatened
Rabbitsfoot	*Quadrula cylindrica cylindrica*	Federally Threatened
Leopard Darter	*Percina pantherina*	Federally Threatened
Harperella	*Ptilimnium nodosum*	Federally Endangered

*Not known to occur within the Ouachita NF

Many of the streams and rivers within the Ouachita National Forest have been surveyed for freshwater mussel species diversity as well as relative abundance. The federally endangered pink mucket mussel, the winged mapleleaf freshwater mussel, and the scaleshell mussel have not been found to occur in any of the surveyed waters. The pink mucket and winged mapleleaf mussels have never been known to occur within the Forest's waters. The scaleshell has been found so rarely that they do not appear to be members of viable populations, and there is no evidence of recent reproduction. These species will remain on the viability concern list, and survey efforts will continue to determine if any evidence of the species on lands within the ONF becomes evident. Any occurrences will be reported to the USFWS immediately. Otherwise, provision for protection of aquatic habitat will follow the streamside management area direction.

Ouachita Rock-pocketbook (*Arkansia wheeleri*)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Populations of this freshwater mussel are known to occur in the Kiamichi and Glover rivers in Oklahoma, and Little River systems in Oklahoma and Arkansas. Although it is not found within the Forest boundary, the Ouachita rock-pocketbook is known to occur downstream of and within close proximity to the Forest. The potential for occurrence along with the federally endangered status of this species makes this a species of viability concern for the Forest. This species will remain on the list of viability concern and survey efforts will continue. As required, any occurrences will be reported to the USFWS. Otherwise, provision for protection of aquatic habitat will follow the streamside management area direction.

Ouachita Rock-pocketbook
Source: USFWS

Arkansas Fatmucket (*Lampsilis powellii*)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Arkansas fatmucket mussels live only in Arkansas and are endemic to the Saline, Caddo, and Upper Ouachita rivers. Historically, this mussel species was found to be relatively common in preferred habitat; however its frequency of detection and its population sizes have been consistently decreasing.

In a 2007 5-year status review by the USFWS, findings indicate that the Arkansas fatmucket mussel has suffered significant population declines with severely reduced distribution since its listing.

Arkansas Fatmucket
Source: USFS

Catastrophic population declines have resulted in the extirpation of Arkansas fatmucket from the South Fork Saline River, while the Caddo River, Ouachita River, South Fork Ouachita River, Middle Fork Saline River, and North Fork Saline River have experienced and continue to experience population declines with extirpation of Arkansas fatmucket from several stream reaches. The increasingly small and isolated populations are becoming even more susceptible to stochastic events and ongoing and/or increasing anthropogenic impacts (USFWS 2007). The Arkansas fatmucket continues to be of great concern to the Ouachita National Forest and protective measures are coordinated through the USFWS whenever Forest activities may impact this species or its habitat.

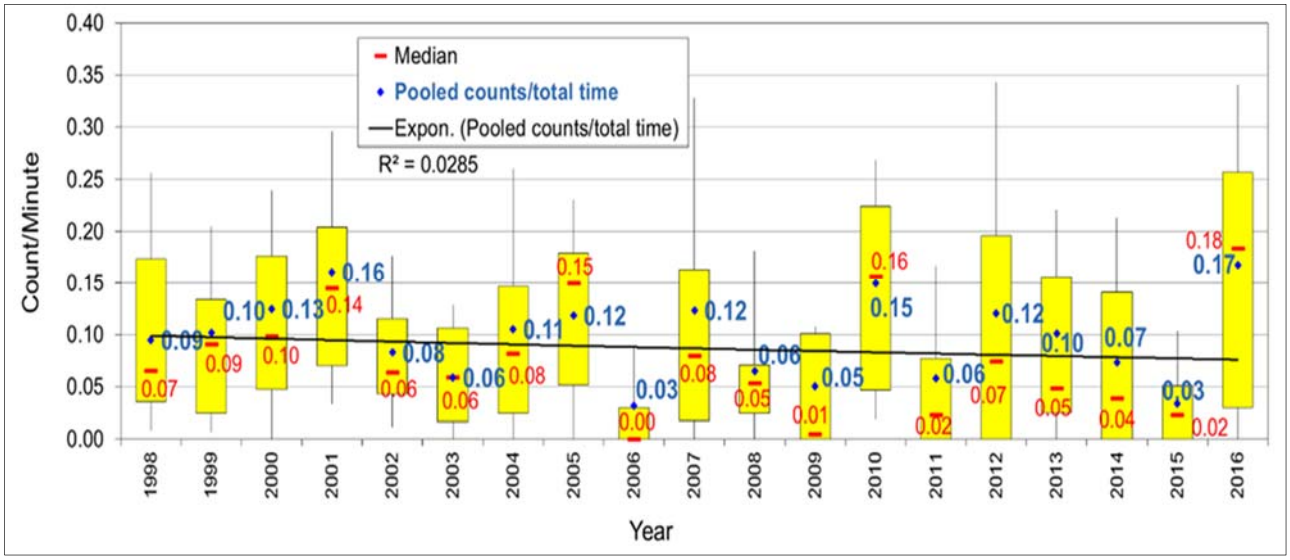
Leopard Darter (*Percina pantherina*)

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

Leopard Darter
Source: USFS

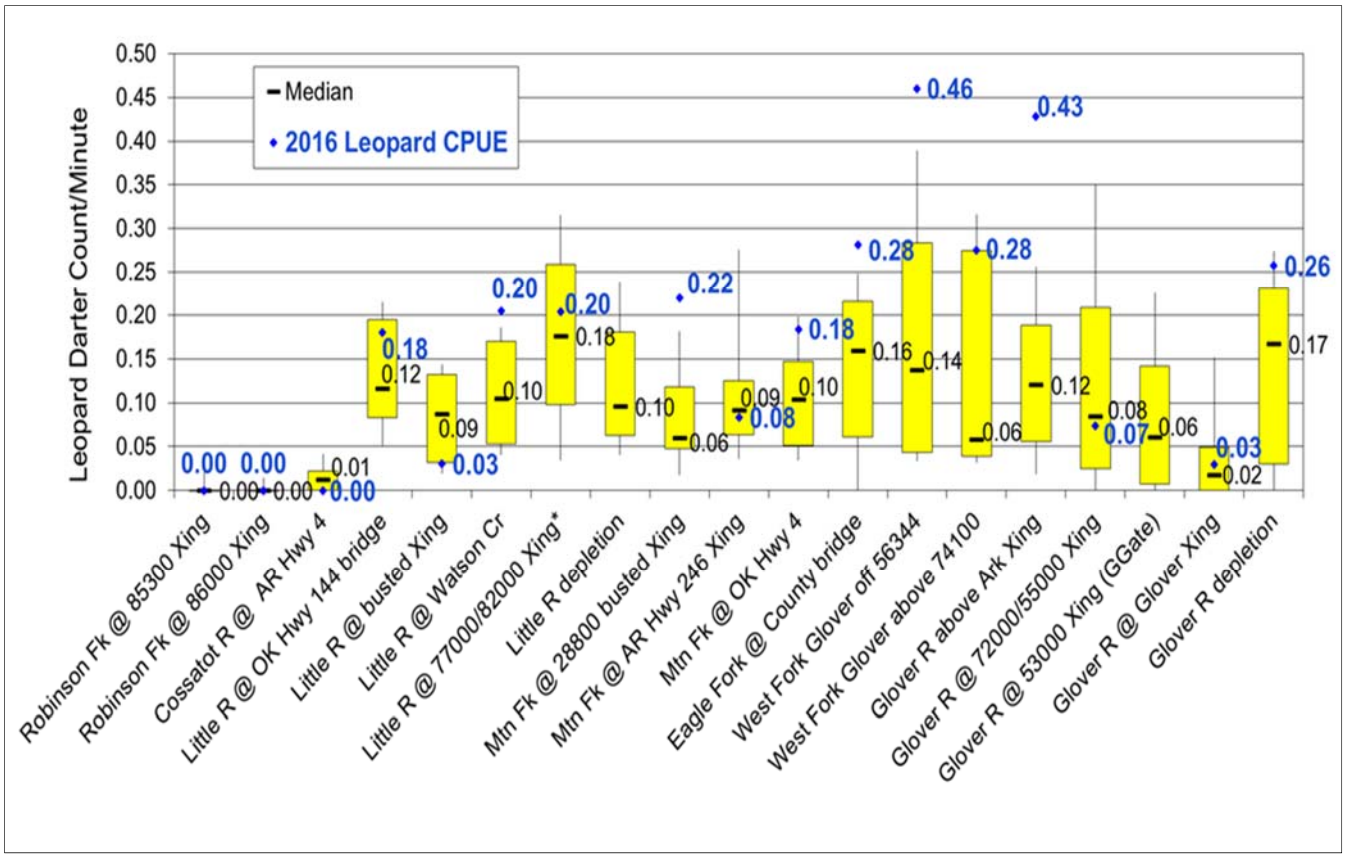
Snorkel counts for Leopard Darters in 2016 resulted in the highest median count since the permanent transect surveys started in 1998. Variability was quite high (comparable to 2007 and 2012). High pooled counts and median counts seem to bottom out and then climb on a 5 to 6 year cycle. However, the increase from a low in 2015 to the high in 2016 is the largest spread experienced in 19 years of data collection. Only one site in 2016, the Highway 4 Mountain Fork River site, was flooding in the first week, but it was surveyed the first of the second week when flows were back to more normal conditions. The trend line for the annual pooled counts of Leopard Darters is not at all statistically significant.

Leopard Darter Annual Pooled Counts, ONF



No Leopard Darters were found at the 2 permanent Robinson Fork sites, making it now 11 years since the last leopard darter was found in a transect at that location. Also, no Leopard Darters were counted at the Cossatot River site within the permanent transect. Leopard Darters were last counted in 2010 within the Cossatot permanent transect, but they are usually seen in non-transect areas as they were in 2014 and 2015. However, in 2016 they were not seen outside the transects at the Cossatot State Park Visitor Center's site nor were any found by a crew of 12 searching from the Cow Creek site down to the Harris Creek takeout over a full 2 day period (approximately 12 river miles). These Robinson and Cossatot off-forest populations are highly vulnerable to extirpation because of small drainage areas each isolated above a large U. S. Army Corps of Engineers' reservoir. All other sites but 3 had 2016 counts higher than their long-term median counts. Most site counts were considerably above prior counts.

Leopard Darter Counts per Minute by Site, ONF



Data presented here would indicate that the populations are experiencing natural variations. Numerous large floods were experienced in 2015 that could have negatively affected spawning, survival of young or simply flushed young out of sampled reach. However, flooding in 2016 appeared to be outside the timeframe when the monitored darters species would be most impacted.

There is a recently discovered and significant threat to Leopard Darter survival. Inadequate genetic variation between and within populations is occurring due to the species isolation by reservoirs and stream crossing barriers. This matter is under further scrutiny with a Genetic Rescue Plan being developed by the US Fish and Wildlife Service with the goal to enrich the gene pools of each of the isolated river basin populations of Leopard Darters to prevent their demise. A draft plan was presented in 2016 to the team working with Leopard Darters, but it was deemed too risky to the species because two reasons: high numbers of Leopard Darters to be captured and holding of these fish in hatcheries with releases just prior to spawning season, which is somewhat of an unknown. This plan is to be revised, but no timetable has been advanced. In the meantime, the situation for the Leopard Darters' long-term survival remains perilous. The Forest Service is not the lead agency for this Threatened Species, but it is continuing to attempt to implement recovery before additional populations are extirpated. Working to remove fish barrier stream crossings in the Buffalo Creek drainage should help with the recovery of that population Leopard Darters of very low genetic diversity.

Recommendations for management include the need to continue monitoring darter species (Johnny, Channel and Leopard Darter with direct Forest Service participation in the surveys). Data from these surveys needs to be prepared and analyzed as it is above. A realistic genetic recovery plan should be developed and implemented as soon as possible. This needs to be done with direct Forest Service assistance, considering 3 of the populations that reside within the Forest include Buffalo Creek, the second most genetically-at-risk population. In addition, the Twin Bridges across Buffalo Creek needs

to be replaced with the already designed bridge, and the low water crossings in the lower Buffalo Creek and middle Big Hudson Creek should be removed or modified to provided less restricted fish passage for the Leopard Darters.

Harperella (*Ptilimnium nodosum*)

For additional information, contact Susan Hooks at shooks@fs.fed.us

Harperella typically grows on rocky shoals, in crevices in exposed bedrock, and (sometimes) along sheltered muddy banks. It seems to exhibit a preference for the downstream margins of small pools or other spots of deposition of fine alluvium. In most Harperella sites, there seems to be significant deposition of fine silts. It may occur in mostly sunny to mostly shaded sites. On the Ouachita NF, harperella occurs in perennial to near-perennial streams either on or among boulders or large cobbles or on course sediment bars. Harperella is most often associated with *Justicia americana*, *Gratiola brevifolia, Dulchium arundinaceum,* and *Eleocharis quadrangulata.*

Harperella
Source: USFS

Population levels at individual sites appear to vary greatly from year to year. Some of this variation is attributable to past population estimates based on rough guesses rather than numerical counts or samples. Even so, the life history of this species suggests that population fluctuations are natural and to be expected. This phenomenon suggests that Harperella depends on a seed bank to supplement annual seed production and should be tolerant of a range of habitat conditions. This is consistent with observations since the discovery of Harperella on the ONF. Annual rainfall and the timing of the rainfall appear to have the most influence on population numbers.

Three known sites of harperella were monitored by the Forest Botanist, including an area along Fiddler Creek, on Irons Forks, and on the North Fork Ouachita. The populations continue to fluctuate from year to year due to drought and flooding events. In 2016 the habitats in the three sites were similar in size and numbers from the past and no known threats to the habitat were observed.

R8 Sensitive and Other Aquatic Species of Viability Concern

For additional information, contact Robert Bastarache at rbastarache@fs.fed.us

There are 67 species on the R8 Regional Forester's Sensitive Species List, including 22 freshwater mussel species, 7 crayfish species and 11 fish species. Of those, the only fish species monitored on an annual basis is the Ouachita Darter.

Some sensitive species and species of viability concern are monitored annually (including the Ouachita Darter). Others are monitored or status surveys are conducted periodically, such as for the endemic Paleback Darter, Caddo Madtom and Ouachita Madtom. The mussel species' populations are in decline rangewide, while the crayfish and the fish populations appear to be stable. All aquatic species habitat is protected by the streamside management area water quality protective measures; therefore, it is expected that all aquatic species will be provided conservation protection from any impacts due to Forest activities. No changes are recommended to the Forest Plan or monitoring protocols at this time.

Ouachita Darter *(*formerly *Percina sp. nov.)* now (*Percina brucethompsoni*)

For additional information, contact Rhonda Huston at rhuston@fs.fed.us

The Ouachita Darter has been formally described (A New Species of Darter from the Ouachita Highlands in Arkansas Related to *Percina nasuta* (Percidae: Etheostomatinae) by Henry W. Robison, Robert C. Cashner, Morgan E Raley and Thomas J. Near, Bulletin of the Peabody Museum of Natural History 55(2):237-252, October 2014.) Ouachita Darter snorkel surveys were initiated in 2004 as an annual survey from Shirley Creek Canoe Camp downstream to the Arkansas 379 Highway Bridge at Oden.

Ouachita Darter
Source: Rich Standage, USFS

During subsequent monitoring, sites originally surveyed during an Arkansas Tech University study have been utilized with modifications such as adding or deleting sites based on flow conditions or occupancy by anglers. The Ouachita Darter surveys are usually conducted in late summer/early fall.

A personal services contract was awarded to Arkansas Tech University in 2009 to look for the Stargazing Darter (*Percina uranidea)* in the Ouachita River, with one found. It and 19 Ouachita darters were captured by trawls further downstream in the transition zone of the River and Lake Ouachita backwaters. This work was expanded into a Challenge Cost Share project undertaken with Arkansas Tech University. Work continued on the Stargazing Darter and the Ouachita Darter for the next 2 field seasons with the final report received in 2014. Results indicated that while there are Ouachita Darters in the stretch of the river that the Ouachita NF is monitoring; larger populations are found further downstream particularly at and right above the backwaters of Lake Ouachita, likely on U.S. Army Corps of Engineers or private lands.

Other Riparian and Aquatic Management Considerations

Game Fish Habitat

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The desired condition for game fish habitat in the Forest Plan is as follows: *"Fishable waters support high-quality angling opportunities."* Objective 27 states, "*Maintain recreational fishing opportunities of stocked lakes and ponds."* This objective is being met by activities that protect, and maintain or enhance fishing recreational opportunities. Monitoring of bass and sunfish spawn by shoreline seining is conducted with supplemental stocking requested from either state as needed. Structural habitat improvements (fish attractors/cover/spawning beds) are added to increase fish cover and improve spawning conditions. Fertilization and liming is used to increase productivity and reduce excessive aquatic vegetation. Access improvements are made to increase the ease of access to various fisheries. Annual to biannual electrofishing is conducted to monitor the adult and sub-adult fish populations of select Ouachita NF lakes and ponds. Annual Channel Catfish stocking is occurring in most managed recreational fishing waters in close coordination with the AGFC and ODWC.
In 2016, fish sampling was continued to monitor the Gizzard Shad population at Cedar Lake. Control measures were again undertaken to reduce the Gizzard Shad population to encourage greater reproduction of young-of-the-year Gizzard Shad to provide needed forage to facilitate

game fish populations in Cedar Lake to obtain better growth. Since gill netting was not/could not be conducted in late fall 2015, the reduction effects are unknown. The trend in Gizzard Shad electrofishing numbers that continue to rise while gill netting numbers continue to drop is of concern. The situation is not clear due the poor sampling conditions in 2014 and no gill netting results for 2015. In the past few years, electrofishing has occurred during the Gizzard Shad spawning season when they were closer to shore than is typically the case, and they are more vulnerable to electrofishing capture since electrofishing occurs only along the shoreline. This would drive up the electrofishing catch, but these results for the larger Gizzard Shad should reach a plateau at some point.

Riparian and Aquatic Habitat and Health

Aquatic Habitat Enhancement Activities

For additional information, contact Clay Van Horn at cvanhorn@fs.fed.us

The desired condition for fish habitat states, *"Movement of fish and other aquatic organisms are not obstructed by road crossings, culverts, or other human-caused obstructions."* Objective 40 also addresses aquatic organism passage: *"Improve aquatic organism passage on an average of no less than six stream crossings per year (where there are road-related barriers to passage)."*

To address the desired condition and Forest Plan objective, 15.1 miles of improved fish passage on 3 streams resulted from 2016 work. Fish passage projects benefit all native fish populations, but are of particular importance to those species that are threatened or endangered or are on the Regional Forester's Sensitive Species List. To address the desired condition and Forest Plan objective, projects such as replacement of failing road crossings, bridges, ramps with riprap, and use of bridges and over-sized culverts are utilized to facilitate fish passage also known as aquatic organism passage (AOP). AOP is a manual requirement of Engineering for any replacement structure as well as a requirement under the Clean Water Act.

The long term objective of this project is to provide passage to Leopard Darters from Buffalo Creek downstream where it has not existed for year and provide safe vehicle access to land beyond the crossing more quickly because of the increased capacity.

Prior plugged and undersized vented low water ford.

This project had been discussed since 1998 but the budget was never available for the project. Joint Chief's OK/AR Woodland Restoration Partnership Project provided the majority of the funds. The US Fish and Wildlife Service provided the crucial missing piece of funding.

Concrete pre-cast three bay open bottom box culvert designed for overtopping.

Funding for restoration of fish passage varies widely, and there has not be a stable source of funding for such projects. There is a backlog of projects which are designed, but not funded, including three critical structures for the threatened Leopard Darter. Vehicles for funding range from using timber sale receipts, funding under the chief's initiatives with both internal and external

partners and use of Flood Restoration funds. The US Fish and Wildlife Service has been a long time contributor to the Forest in replacing structures in Oklahoma and Arkansas for the threatened Leopard Darters and/or Regional Forester's listed sensitive species.

Fish Passage (AOP)

FY	# of Projects	Miles
2006	7	53.0
2007	5	13.0
2008	2	11.0
2009	11	19.5
2010	6	14.0
2011	4	11.5
2012	3	5.0
2013	3	3.0
2014	7	23.6
2015	9	21.9
2016	3	15.1
Totals	60	190.6

Amphibian Habitat

There has been no active monitoring of amphibian habitat in the last several years, due primarily to the lack of staff in a stream biologist position.

Watershed Function and Public Water Supply

For additional information, contact Don Seale at lseale@fs.fed.us

There is a specific objective that relates to watershed function: *OBJ 14. Maintain or improve watershed health.*

Healthy forests, the watersheds and headwaters they support, and the clean water they supply are often taken for granted. One of the most important aspects of forest management is the protection of watersheds and public water supplies. The pro-active management of watersheds within the Forest has a direct correlation to clean drinking water. Nationally, federal forests provide about 20 percent of our drinking water.

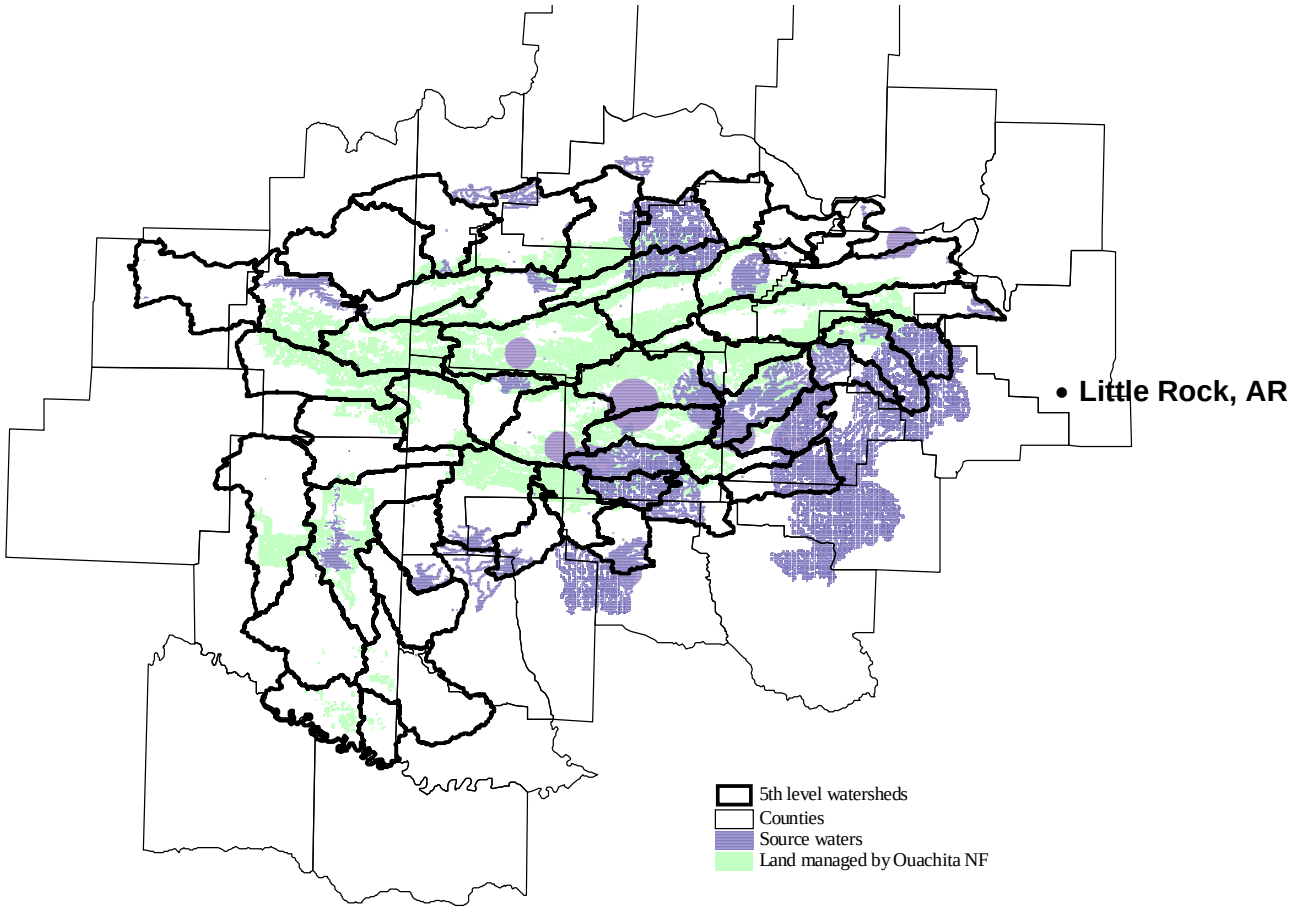
Public water supply surface sources with lands on or near the Forest include Broken Bow and Wister Lakes in Oklahoma and the following source areas in Arkansas: South Fork Reservoir (Cedar Creek), Iron Forks, and James Fork Reservoirs; Hamilton, Nimrod, Ouachita, Waldron, Winona, and Square Rock Lakes; and the Caddo, Middle Fork Saline, Ouachita, Petit Jean, and Saline (eastern) Rivers.

"Americans often assume that our health and well-being are separate from the health of our natural world. But I return again to the simple fact that we Americans often take for granted everyday: turning on those water faucets. The clean water that emerges is made possible in large part by the stewardship of our working rural land and our forests in particular. My hope, and I trust you share it, is that together we can foster a greater appreciation in this country for our forests and that all Americans, regardless of where they live, see the quality of their lives, and the quality of their forests as inseparable."

—USDA Secretary Tom Vilsack, August 2009

As part of the 1998 Clean Water Action Plan, each state identified source waters that are the contributing areas above municipal or public water sources. These areas are generally separated into ground waters and surface waters. Forty-seven surface sources that intersect National Forest System lands are found in Arkansas, and one is found in Oklahoma. Sixty-two Arkansas wells and springs and six Oklahoma wells fall within the influence of lands managed by the Ouachita NF. The figure below identifies the approximate locations of source waters on or near the Ouachita NF.

Approximate Locations of Source Waters on or near the Ouachita NF



Within in the Forest Plan, the desired condition for watersheds is: *"Watersheds are healthy, dynamic, and resilient, and are capable of responding to natural and human caused disturbances while maintaining the integrity of their biological and physical processes and maintaining the connectivity of habitats for aquatic organisms. Watersheds, streams, groundwater recharge areas, springs, wetlands, and aquifers produce high quality water. Soil productivity, riparian dependent resources, and other uses are sustained."*

On average, every 5 years, through the paired-stream Basin Area Stream Survey, watershed condition is evaluated to determine if the progress in condition ratings has occurred. Discussions of these results are included under the Stream and River Fish section.

Herbicide Monitoring

For additional information, contact Don Seale at lseale@fs.fed.us

In 2016, one stream was monitored twice on the Mena/Oden RD for the presence of the herbicide glyphosate and its derivative aminomethylphosphonic acid (AMPA) below treated stands. Lab results indicate that the glyphosate and AMPA were not detected in the samples submitted. This is an ongoing monitoring program where 10% of areas treated with herbicides are supposed to be monitored for off-site movement. No changes to the monitoring protocols are recommended; however, samples need to be submitted to the lab for analysis and reported each year. Work was done to assure that District offices knew where to submit samples for analysis.

This monitoring program of herbicides is undertaken to assure compliance with a provisions of state's regulations for water quality (under the Clean Water Act). These regulations require the NFS to conduct sample water quality monitoring to determine if pesticide applications have resulted in any pesticide runoff to water and to determine contamination, if any, on areas such as municipal watersheds, fish hatcheries, or near private domestic water supplies.

Watershed Condition Class

For additional information, contact Don Seale at lseale@fs.fed.us

In 2010, the Forest Service launched a national effort to assign a watershed condition class (WCC) for all 6th level subwatersheds. This effort considered a wide range of forest conditions including: ownership patterns, aquatic biota, riparian vegetation, physical habitats, flow characteristics, road and trail condition, geology and soil condition, fire vulnerability, vegetative cover, insect and disease risk, invasive species, and range condition. Based on these criteria, the functional condition of 162 subwatersheds on the Ouachita NF were classified. Additionally, 2 watersheds, the Upper South Fork of the Ouachita River (Functioning Properly) and the Middle South Fork of the Ouachita River (Functioning at Risk) were identified as priority watersheds and targeted for improvements. The Priority designation was given based on the presence of municipal water sources, locally high road and stream densities, and the number of culverts and road-stream crossings. While the watershed condition class is unchanged from last year, a recent survey indicated that many of the proposed improvements in the priority watersheds have been completed and it is anticipated that the condition class of these watersheds will be upgraded and new priority watersheds will be selected in the near future.

Subwatersheds and Associated Risk for Aquatic Biota calculated in 2010 (WCC), ONF

Condition Class	Number of subwatersheds	Percentage
Functioning Properly	24	14.81
Functioning at Risk	44	27.16
Impaired Function	94	58.02
Total	162	

Subwatersheds and Associated Risk for Aquatic Biota calculated in 2015 and 2016 (WCC), ONF

Condition Class	Number of subwatersheds	Percentage
Functioning properly	57	35
Functioning at risk	104	64
Impaired Function	1	1
Total	162	

Watershed Function—Emerging Policy

The U.S. Department of Agriculture (USDA) *Strategic Plan for FY 2015–2020* identifies as a means and strategy under Objective A that the Forest Service should *"…*maintain resilient land and water conditions at the watershed level and restore deteriorated lands and waters (such as abandoned mine lands and areas of unmanaged recreation use needing rehabilitation)." Under Objective D, *Provide abundant Clean Water*, the Forest Service is directed to assure the "…watersheds on our Nation's forests and grasslands are in good condition, functioning as they should." To achieve this goal, the Forest Service, an agency of USDA, is directed to restore degraded watersheds by strategically focusing investments in watershed improvement projects and conservation practices at the landscape and watershed scales. The Watershed Condition Framework (WCF) is a comprehensive approach for classifying watershed condition, proactively implementing integrated restoration in priority watersheds on national forests and grasslands, and tracking and monitoring outcome-based program accomplishments for performance accountability. In May 2011, the Forest Service published FS-977, a document to explain the Forest Service policy emphasis on a consistent, science-based approach to classify the condition of the watersheds that the Forest Service manages and protects. The watershed condition policy goal of the Forest Service is "to protect National Forest System watersheds by implementing practices designed to maintain or improve watershed condition, which is the foundation for sustaining ecosystems and the production of renewable natural resources, values, and benefits" (FSM 2520). The WCF provides a means to achieve this goal by:

- Establishing a systematic process for determining watershed condition class that all national forests can apply consistently
- Fostering integrated ecosystem-based approaches for managing watersheds and aquatic resources
- Strengthening the effectiveness of the Forest Service to maintain and restore the productivity and resilience of watersheds and their associated aquatic systems on NFS land
- Improving the internal dialog among disciplines to focus and integrate programs of work to efficiently maintain and restore watersheds and aquatic ecosystem

- Enabling a coordinated and priority-based approach for allocating resources to restore watershed
- Enhancing coordination with external agencies and partners in watershed management and aquatic species recovery efforts
- Improving national-scale reporting of watershed condition

Collaboration

Collaborative Activities

- The Nature Conservancy (TNC) and Water Erosion Prediction Project (WEPP) – inventory and application of the WEPP model
- Safe Harbor Act – Review and cooperation with TNC and USFWS
- University of Arkansas at Monticello – sponsored a study on stream characteristics using digital elevation models for the Forest; completed an economic study analyzing the economic impacts of CFLRP work
- Arkansas Tech University – conducted snorkeling and netting study to find stargazing and Ouachita darters in the Ouachita River with the result that a previously unknown concentration of both was discovered
- Mississippi National Forest – Aquatic Cumulative effects for Plan Revision
- WEPP workshop – sponsored, participated and presented at two one-week sessions
- Law Enforcement and Investigation continues to collaborate with local county law enforcement officers in Arkansas and Oklahoma under seven Cooperative Law Enforcement Agreements
- San Dimas Technology Development Center –
    - WO presentation on recreation carrying capacity for OHV use as it relates to water quality
    - San Dimas has provided equipment and financing and worked with the Forest for over 5 years to examine fish passage monitoring techniques in cooperation with Arkansas Tech University. This project is part of a nation-wide effort to determine appropriate and cost-effective means of detecting fish passage at newly built structures designed for fish passage to determine their effectiveness

Cooperative Agreements for Transportation: On June 15, 1971, Weyerhaeuser Company signed a road right-of-way construction and use agreement (Cost Share Agreement) with the United States of America (revised in 1994); thus, Weyerhaeuser and the Forest Service joined in developing and maintaining those roads serving their ownerships and shared in those costs. Initially the agreements addressed an area within and adjacent to the Ouachita National Forest in Garland, Perry, Montgomery, Polk, Saline, Yell, Hot Springs, Howard, Scott, and Pike counties, Arkansas that was defined as the Arkansas Agreement Area. Subsequent to the initial agreement that was signed in 1971, Weyerhaeuser and the Forest Service have signed over 200 supplements to the original. Each supplemental agreement either added new segments of road, removed segments that were no longer needed, or included additional work to road segments already in the agreement, and they defined the proportionate shares for the Forest Service and Weyerhaeuser attributable to each road segment. Weyerhaeuser has sold most of their land that

was in the original cost share agreement, and the Forest Service is in the process of settling deferred maintenance accrued on the roads that serve those lands and terminating easements as a result of the change in ownership of that land. The Forest Service is also entering into new road maintenance agreements with the new owners of the Weyerhaeuser land to maintain the roads jointly owned.

Wyden Amendment Activities: The Wyden Amendment (Public Law 109-54, Sec 434) authorizes the Forest Service to enter into cooperative agreements to benefit resources within watersheds on NFS lands. The amendment allowed the Forest Service to spend federal money on non-federal lands as long as the projects benefit the fish, wildlife, and other resources on NFS lands within an affected watershed. This law allows the Forest Service to partner with other entities for projects that benefit resources on both public and private lands. The project's goals must be to restore and enhance watersheds. Benefits can include:

- Improving, maintaining, or protecting ecosystem conditions through collaborative administration and/or implementation of projects
- Improving collaborative efforts across all ownerships, including efforts on lands that are not adjacent to NFS lands
- Increasing operational effectiveness and efficiency through the coordination of efforts, services, and products

Other types of projects on non-National Forest System land that would qualify for federal participation under the Wyden Amendment include in-stream restoration work and the clearing of fire-prone brush adjacent to NFS lands. Since the authorization does not provide for additional funding, any dollars spent on private land must come from existing appropriations.

Stevens Act Activities: Each year the District units conduct prescribed fires jointly with the Arkansas Forestry Commission (AFC) on private lands adjacent to Forest Service ownership. Landowners sign an agreement with AFC to conduct prescribed fires. Working together, the Forest Service and AFC then coordinate prescribed fire activities. In 2016, Steven's Act Prescribed burning by the Arkansas Forestry Commission totaled 2,326 acres on lands adjacent to or within the Ouachita National Forest.

Steven's Act Acres of Prescribed Fire by FY, ONF

Stevens Act Prescribed Fire (Acres)	2006	2007	2008	2009	2010	2016
	>4,000	>9,000	>2,500	>3,000	>2,700	>2,300

Fish and Game Agencies. Each year, the Forest Service meets with the game and fish agencies that represent the states of Arkansas and Oklahoma. The coop meeting with Arkansas Game and Fish Commission is held each year in April at varying locations and the coop meeting with the Oklahoma Department of Wildlife Conservation is held generally in January at Beavers Bend State Park. Game management, fish populations and items of mutual interest are discussed. Emerging issues, on-going studies or restoration efforts are presented to the group for discussion.

Stewardship Contracting. Stewardship contracting authority is from Section 604 (16 USC 6591c) of Public Law 108-148 as amended by Section 8205 of Public Law 113-79, the Agricultural Act of 2014. This is a permanent authority for stewardship contracting. Collaboration must be a part of stewardship contracting project planning and continue throughout the life of the project. The intent of stewardship contracting is to accomplish resource management with a focus on restoration. Stewardship contracting helps achieve land management goals while meeting local and rural community needs, including contributing to the sustainability of rural communities and providing a continuing source of local income and employment. It focuses on the "end result" ecosystem benefits and outcomes, rather than on what's removed from the land. Stewardship projects and details are displayed in the tabulation below.

Stewardship Project Status as of September 30, 2016, ONF

Project Name/ Ranger District	Date Project Approved	Project Area (acres)	Status
Shiloh Poteau	01/26/2007	1,146 CFLRP	Integrated Resource Timber Contract awarded 08/25/2009 Contract completed & closed 01/25/2011
Shiloh Activities: 2,261 CCF timber on 307 acres sold for $74,613.33. Service work for Wildlife Stand Improvement (Midstory Reduction) within MA22 was completed on 307 acres at a cost of $19,955.00. Shiloh Retained Receipts: $2,100.09 in retained receipts has been collected and will be used for fireline construction within the project area. (Balance of funds was collected as CWKV to be used for contract area improvement activities.)			
Pittfork Mena	01/22/2008	10,500 CFLRP	Integrated Resource Timber Contract awarded September 16, 2009. Contract is ongoing.
Pittfork Activities 15,433 CCF timber on 1,769 acres sold for $367,355.75. All service work involving 730 acres of Wildlife Stand Improvement for Midstory Removal, and development of a 1.97 acre Wildlife Opening and a 0.10-acre Wildlife Pond was completed at a total cost $88,210.00. Pittfork Retained Receipts: All net revenue will be collected as retained receipts to conduct prescribed burning on 9,326 acres within Management Area 21 – Old Growth Restoration (Pine-Grass Emphasis and Management Area 22 – Renewal of the Shortleaf Pine – Bluestem Grass Ecosystem and Red-Cockaded Woodpecker Habitat.			
Glover XIII Oklahoma	06/28/2007	10,981	Integrated Resource Timber Contract awarded September 28, 2010. Contract is completed and pending closure.
Glover XII Activities: 4,112 CCF timber on 157 acres sold for $163,773.40. Service work to be completed involves an estimated 0.80 miles of fireline construction at a cost of $1,267.20. Glover XIII Retained Receipts: $163,312.82 in retained receipts was collected. These receipts were used to install a water control structure and are being used to conduct disking on 6,000 acres at the Red Slough area to restore desired wetland conditions.			
Tornado Recovery and Wildlife Improvement Mena & Oklahoma	06/23/2009	45,000	The Mountain Fork Stewardship Salvage supplemental project agreement (SPA) was entered into on August 13, 2009 with the National Wild Turkey Federation (NWTF) under the Master Stewardship Agreement between the Forest Service Southern Region and the NWTF. The purpose of the SPA was to address salvage of timber damaged by an April 19, 2009 tornado which affected the project area and to complete restoration activities. Activities within the SPA have been completed the supplemental agreement has been closed.
Tornado Recovery and Wildlife Improvement Activities: 12,571 tons of pine sawtimber and 13 CCF of hardwood sawtimber were removed at a value of $75,667.82 that included the cost of replacing two 60-inch culverts. Service work completed included 4.38 acres of glade restoration, logging, and decking of 166.97 CCF of hardwoods and removal of 5,603 Tons of biomass at a total cost of $7335.80. Tornado Recovery and Wildlife Improvement Retained Receipts: $68,333.30 in retained receipts was collected. Receipts will be used to complete some of the approved activities which included constructing 5 miles of fireline, prescribed burning on 1,587 acres and treatment of non-native invasive species on 80 acres.			

MP Fodderstack Caddo	09/22/20008	1,146	Integrated Resource Timber Contract was awarded August 17, 2012. Contract was completed and closed on June 10, 2016.

MP Fodderstack Activities: Timber was sold on 307 acres totaling 3,941 CCF at a value of $164,874.87.
Service work completed involved 46 acres of Wildlife Stand Improvement for Overstory Mast Development, maintenance of 4 wildlife ponds, reconstruction of 1 wildlife pond, improvement of 3 existing wildlife openings, and development of 3 new wildlife openings totaling 3 acres. The cost of these service work items was $42,427.00.

MP Fodderstack Retained Receipts:

$34,590.01 in retained receipts was collected. Retained receipts to the extent possible are being used to restore native plant communities on 52 acres of acquired pasture land (Crigger Field).

Buffalo Creek II Oklahoma	03/23/2011	19,200 CFLRP	Buffalo Creek II Stewardship (IRTC) was awarded July 6, 2012. Contract was completed and closed on January 11, 2016.

Buffalo Creek II Activities: Timber was sold on 950 acres totaling 22, 577 CCF with a value of $557,521.65.
Service work completed included construction of 5 wildlife ponds at a cost of $12,500.00

Buffalo Creek II Retained Receipts:
$441,806.39 in retained receipts was collected. Retained receipts to the extent possible will be used for a bridge replacement, 14 miles of fireline construction, to construct a low-water crossing at a current wet crossing, and to replace a non-functioning low water crossing with a box culvert. The total estimated cost of these items is $569,200.00. The fireline construction is within Management Area 22 – Renewal of the Shortleaf Pine – Bluestem Grass Ecosystem and Red-Cockaded Woodpecker Habitat. The proposed road work is planned to correct fish passage issues, restore hydrologic conditions, and reduce sedimentation. The project area is located within the watershed of streams which provide habitat for the Leopard Darter, a threatened species.

Buffalo Creek III Oklahoma	01/31/2014	154,000 CFLRP	East Narrows Stewardship (IRTC) awarded on September 26, 2014 - on-going with a termination date of October 31, 2019. The Mine Creek Stewardship (IRTC) awarded on September 28, 2015 - on-going with a termination date of September 30, 2020.

Buffalo Creek III Activities: East Narrows Stewardship Contract: Timber was sold on 817 acres totaling 20,975 CCF with a value of $701,125.16.
Service work to be completed includes development of 12 wildlife ponds at a cost of $26,400.00.

Mine Creek Stewardship Contract: Timber was sold on 530 acres totaling 15,249 CCF with a value of $354,757.71.
Service work to be completed includes development of 5 wildlife ponds at a cost of $12,500.00.

Buffalo Creek III Retained Receipts:

Retained receipts to the extent possible will be used for: improvement of wetland wildlife habitat on the Red Slough area by installing levees and water control structures; along with use of Title II funding (Secure Rural Schools Act) contribute to concreting approaches to the bridge over the Glover River on road 53000 to reduce sedimentation and thus improve water quality as the Glover River is critical habitat for the federally threatened leopard darter; reconstruction of a segment of road 26600 to reduce sedimentation and restore hydrologic conditions; installation of 30 gates to reduce illegal use and erosion; and, contribute to replacing the bridge over the Mountain Fork River on road 2800 to restore fish passage with particular emphasis on the leopard darter. The total estimated cost of these items is $390,620.00.

Black Fork Mena/Oden	06/27/2017	379,206 CFLRP	Black Fork Stewardship (IRTC) is planned to be offered and awarded in Fiscal Year 2017.

Black Fork Stewardship Contract Activities: Estimated timber to be sold, 1,322 acres, totaling 15,023 CCF- estimated value of $261,867.00.

Service work to be completed includes bush removal on 217 acres of native grass plots and rehabilitation of a 2 acre wildlife plot.

Black Fork Retained Receipts:
Retained receipts will be used to complete activities that help restore soil and water resources in the Wolf Pen Gap Trail Complex (WPG). To the extent possible, the following activities will be completed: repair and restoration of drainage structures and blading of 17.2 miles of road and maintenance of 26.6 miles of motorized trails; cleaning out of culverts and hardening of stream course approaches with oversize gravel; installation of gates to reduce unauthorized use; obliterate 6.25 miles of trail which includes re-shaping, fertilization, seeding and mulching to revegetate and rehabilitate eroded sloped; and, relocate 6.40 miles of trails. The total estimated cost of these items is $964,770.00. Additional retained receipts from future stewardship contracts are planned to be transferred into the Black Fork stewardship project to accomplish this soil and water restoration work in the WPG area.

Recreation and Scenery Management

For additional information, contact Bill Jackson or williamjackson@fs.fed.us

Abundant opportunities exist for the public to use and enjoy the Ouachita NF. Areas or facilities include developed recreation sites, semi-private and wilderness areas and trails. Recreation participation, activities, and services contribute to visitors' physical and mental well-being and represent a variety of skill levels, needs, and desires. Quality fish and wildlife habitat and a variety of access opportunities are available to the public. Facilities and infrastructure are high quality, well maintained, safe, accessible, and consistent with visitors' expectations. Primitive recreation opportunities are maintained on at least 70,000 acres, semi-primitive recreation opportunities on at least 136,000 acres, and roaded-natural recreation opportunities on much of the remainder of the Forest. Existing "rural" recreation opportunities in developed recreation areas are maintained.

The following Management Areas offer essentially primitive recreation opportunities in a natural setting:

MA 1 – Wilderness
MA 20 – Wild and Scenic Rivers
MA 17 – Semi-Primitive Areas

MA 1 – Wilderness (National Wilderness Preservation System)

For additional information, contact Bill Jackson or williamjackson@fs.fed.us

There are 6 wilderness areas totaling approximately 64,469 acres located within the Ouachita NF: Black Fork Mountain Wilderness (AR and OK); Upper Kiamichi (OK) and Caney Creek, Poteau Mountain, Dry Creek, and Flatside (all in AR) The 6 wilderness areas were congressionally designated in 3 separate acts:

- The Eastern Wilderness Act of 1975, Public Law 93-622: Caney Creek Wilderness, Arkansas (14,460 acres)
- Arkansas Wilderness Act of 1984, Public Law 98-508: Black Fork Mountain Wilderness (8,350 acres); Poteau Mountain Wilderness (11,299 acres, Dry Creek Wilderness (6,310 acres) and Flatside Wilderness (9,507 acres), all in Arkansas.
- Winding Stair Mountain National Recreation and Wilderness Area Act of 1988, Public Law 100-499: Black Fork Mountain Wilderness (4,789 acres) and Upper Kiamichi Wilderness (9,754 acres), both in Oklahoma.

The eligibility and suitability of certain areas within the Ouachita NF for possible future wilderness designation were studied during compilation of the Forest Plan. Lands adjacent to Flatside Wilderness (620 acres) and East Unit of Poteau Mountain (77 acres) in Arkansas and Upper Kiamichi Wilderness (1,096 acres) in Oklahoma are recommended for addition to the National Wilderness System, primarily because they met the criteria and adding these lands to the National Wilderness Preservation System would establish more logical and manageable boundaries for these areas. Completing these additions would also be consistent with Forest Plan desired conditions for public and enjoyment of national Forest System lands, including conservation of opportunities for semi-primitive recreation settings.

The proposed additions to Flatside Wilderness and Poteau Mountain in Arkansas and Upper Kiamichi Wilderness in Oklahoma are contiguous to existing wilderness boundaries, would increase visibility and east of identification of wilderness versus non-wilderness areas, would create more manageable overall boundaries for administrative purposes, and would add areas of scenic value to each wilderness. The recommended wilderness additions total 1,793 acres. If

Congress adds these areas to the National Wilderness Preservation System, they will become part of MA 1a. During 2016, public interest was shown in adding lands to the current Flatside Wilderness.

The Forest Plan recommendations are preliminary administrative recommendations that will receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture and/or the President of the United States. Congress has reserved the authority to make final decisions on wilderness designation. A congressional sponsor (proponent) would be required to advance the recommendations through the system. No action has yet been taken to advance these recommendations.

Forest Plan OBJECTIVE 30, states, "Update all Wilderness Management Plans, including monitoring components, wilderness education, and restoration needs, by 2008."

No Wilderness Management Plans have been updated; however, all Wilderness units on the Forest have met and exceeded that goals set by the Chief's 10 Year Wilderness Stewardship Challenge (the Challenge), which concluded in FY14. The 10-Year Challenge was developed by the Chief's Wilderness Advisory Group as a quantifiable measurement of the Forest Service's success in Wilderness stewardship. The goal identified by the Wilderness Advisory Group, and endorsed by the Chief, was to bring each and every wilderness under Forest Service management to a minimum stewardship level by the 50th Anniversary of the Act in 2014. Ten critical elements of wilderness stewardship were identified and a "minimum stewardship level" was defined as meeting 6 out of the 10 elements. The following chart depicts the individual scores per elements and final stewardship score for each individual wilderness unit.

10 Yr. WSC Element	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Wilderness	Fire Plans	Invasive Plants	AQV Monitoring	Education Plans	Ops for Solitude	Rec Site Inventory	Outfitter & Guide Language	Forest Plan Standards Adequate	Information Mgt. Needs Met	Baseline Workforce	**Final Scores**
Black Fork Mountain	10	10	10	4	6	4	6	6	10	2	68
Caney Creek	10	10	10	10	10	10	6	6	10	2	78
Dry Creek	10	10	10	4	6	4	6	6	10	2	68
Flatside	10	10	10	4	6	4	6	6	10	2	68
Poteau Mountain	10	10	10	4	6	4	6	6	10	2	68

Color Key

60+ At or Above Standard

Wilderness Stewardship Headwater Stream Sampling

For additional information, contact Judy Logan at jlogan@fs.fed.us

The "Wilderness Stewardship Challenge" was instituted in 2004 to ensure that wildernesses (WA) are being properly managed to leave them unimpaired for present and future generations. Monitoring air quality values was identified as an accountability element (10 total) in the Challenge. An air quality value (AQV) is a resource sensitive to air pollution, selected upon relative sensitivity to pollution, an indicator of the natural conditions of the wilderness area, and importance to wilderness visitors.

An Air Quality Value Plan was developed for the Quachita NF to provide an evaluation of currently available air quality monitoring and modeling data for the wilderness areas managed by the Ouachita NF and an evaluation of resources that might be affected by air pollution. This evaluation was used to select Air Quality Values and develop a monitoring plan that will allow the Forest to determine whether air quality in wilderness areas is improving or degrading and whether it is affecting wilderness values. The plan also identifies the sensitive receptors and indicators that can be measured to evaluate the effect of air pollution on AQVs and describes how inventory and monitoring will be conducted. (http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3811710.pdf).

In 2010, the Regional Office Air Program provided the funding and opportunity to achieve one of the Wilderness Area Stewardship Challenges for the Forest, through the national initiative for Wilderness Air Quality Sampling. Funding was provided to sample headwater streams of wilderness areas within each geological ecoregion of the Forest, and/or in any Class I Wilderness Areas, particularly focusing on stream water chemistry on National Forest System lands as influenced by atmospheric deposition. The 2010 water collection is the first in this 3-year sampling effort. After consulting with the Forest Soil Scientist, a team consisting of the Forest Stream Ecologist, Botanist, and Recreation Specialist, sampled 3 to 4 headwater streams in each of the 4 wilderness areas including; Caney Creek (Class I), Dry Fork, Flatside and Upper Kiamichi.

The initial 2010 risk assessment identified Caney Creek and Flatside Wildernesses as the areas most at risk for acidification on the Forest. When lithology and water chemistry are combined, Caney Creek and Little Cedar Creek are rated as “minimally affected by acidification”; meaning that fish species richness may begin to decline. Stream chemistry from Dry Creek and Poteau Mountain Wildernesses indicate that these areas are not affected by acidification. Risk of acidification in Upper Kiamichi River and Black Fork Wildernesses is unknown because the lithology is unclassified and there has not been any stream chemistry available to use in the assessment.

Ozone biomonitoring, the systematic examination of vegetation for symptoms of ozone injury, is one of the health based indicators currently used in the Forest Inventory and Analysis (FIA) Detection Monitoring Program. FIA biomonitoring provides information on visible symptoms of ozone rather than ozone concentrations in the air. The most recent interpretation of the ozone injury data presents a national ozone risk map (Smith et al. 2008). According to the report, western Arkansas and the Ouachita wilderness areas are at low risk for ozone impacts to forest ecosystems. However, ozone monitoring representative of Caney Creek shows that concentrations have been increasing and are approaching the NAAQS (which establishes a threshold for detrimental effects to vegetation) indicating that ozone exposures may pose a threat to vegetation. Caney Creek is the only Wilderness on the Forest that is at risk from ozone.

The Forest team determined that comprehensive stream sampling for certain air quality parameters within the Upper Kiamichi WA in Oklahoma, and within the Dry Creek, Flatside and Caney Creek WAs in Arkansas would adequately represent the Forest’s susceptibility to air pollution. The purpose of the initial inventory is to determine whether any of the streams in the wilderness have been adversely affected by air pollution, and to identify streams that are more sensitive than others.

The study design allowed the Forest to participate in a synoptic inventory of stream water condition to determine the extent to which air pollution is currently affecting water resources in each of the wildernesses. A synoptic inventory strives to collect samples from many sites across similar geographic areas at times expected to exhibit fairly stable water chemistry. The Ouachita NF Geologist, Soil Scientist, Stream Ecologist, Botanist, Wildlife Biologist, Wilderness Manager and Air Specialist were all involved in the selection of wilderness areas as well as the streams to

be sampled. Two samples, one a replicate, were collected from each stream selected for sampling during spring base flow for three years from each wilderness area. Within the 4 wildernesses selected for the inventory, stream water samples were collected from 3-5 headwater streams within each wilderness boundary following the Standard Operating Procedures outlined in the "National Water Chemistry Field Sampling Protocols for Air Pollution Sensitive Waters" (Sullivan *et al.* 2012).

Stream water was sampled for analysis for the following parameters: temperature, pH, acid neutralizing capacity/alkalinity, (ANC/Alkalinity), conductivity, anions (F, Cl, NO3, PO4, SO4) and cations (Li, Na, NH4, K, Mg, Ca). In addition to collecting water samples, stream flow data was recorded. A Marsh-McBirney flow meter was used to measure stream water flow. Water samples were sent immediately after collection to the water lab in Fort Collins, CO.

Baseline condition for water chemistry was established after three spring season samples had been collected and analyzed. Upper Kiamichi River, Dry Creek, Flatside, and Caney Creek Wilderness Areas (WAs) were sampled for baseline in the spring of 2010, 2011 and 2012. Caney Creek WA was sampled in 2013 and will continue to be sampled annually as funding allows. Caney Creek is being sampled because of the new power plant and is outside of the wilderness challenge now. The need for long-term monitoring was based on the results of the initial inventory and baseline conditions.

Caney Creek WA is the only Class I Wilderness Area on the Forest and has point sources of sulfur dioxide and nitrogen oxide emissions within 100 kilometers (roughly 62 miles) of the WA. Baseline conditions for Upper Kiamichi, Flatside and Dry Creek WAs have been established, and again, as funding allows, these WAs will be re-sampled periodically but not annually as Caney Creek WA will be.

Initial data analyses reveal that pH and ANC/alkalinity are the aquatic parameters most likely to indicate changes in air quality and are therefore used to demonstrate aquatic baseline and current condition. The pH of surface waters is important to aquatic life because pH affects the ability of fish and other aquatic organisms to regulate basic life-sustaining processes, primarily the exchanges of respiratory gasses and salts with the water in which they live.

Such important physiological processes operate normally in most aquatic biota under a relatively wide pH range (*e.g.*, 6-9 pH units). There is no definitive pH range within which all freshwater aquatic life is unharmed and outside of which adverse impacts occur. Rather, there is a gradual "deterioration" in acceptability as pH values become further removed from the normal range (http://www.waterboards.ca.gov/rwqcb5/water_issues/basin_plans/ph_turbidity/ph_turbidity_04phreq.pdf).

Alkalinity is a measure of the acid-neutralizing capacity (ANC) of water. Acid-neutralizing capacity means the ability to accept acid without a subsequent drop in pH. Alkalinity is basically a measure of how much antacid is dissolved in the water. The more acid that can be added to water before the pH starts to drop, the higher the alkalinity (http://www.skepticalaquarist.com/alkalinity).

Upon completion of the data and stream sample collections, the water samples and data forms were sent to the analytical laboratory immediately. Thirteen wilderness area headwater streams were sampled in FY 2010. Results indicate that the acid neutralizing capacity (ANC) for 11 of the streams was >50 microequivalents/liter (µeq/l) falling in the 'Not or Minimally Affected by Acidification' category. Only 2 streams (Passube Creek (ANC 22.4) in the Upper Kiamichi Wilderness, and Caney Creek (ANC 42.1) in the Caney Creek Wilderness) fell into the 'Sensitive

to Acidification' category which is between 20-50 (µeq/l) in the 2 streams. None of the wilderness area streams that were sampled fell into the 'Episodically Acidic' (0-20 (µeq/l) or the 'Chronically Acidic' (<0 (µeq/l) categories.

Eleven wilderness area headwater streams were sampled in 2011. Results indicate that the acid neutralizing capacity (ANC) for all 11 streams was >50 microequivalents/liter (µeq/l) falling in the 'Not or Minimally Affected by Acidification' category. None of the wilderness area streams that were sampled fell into the 'Sensitive to Acidification' (20-50 µeq/l), 'Episodically Acidic' (0-20 µeq/l) or the 'Chronically Acidic' (<0 µeq/l) categories.

Thirteen wilderness area headwater streams were sampled in 2012. Results indicate that the acid neutralizing capacity (ANC) for 12 of the streams was >50 microequivalents/liter (µeq/l) falling in the 'Not or Minimally Affected by Acidification' category. Caney Creek (ANC 44.8) in the Caney Creek Wilderness Area fell into the 'Sensitive to Acidification' category which is between 20-50 (µeq/l) in only one stream. None of the wilderness area streams that were sampled fell into the 'Episodically Acidic' (0-20 µeq/l) or the 'Chronically Acidic' (<0 µeq/l) categories.

In 2013, only the 4 Caney Creek Wilderness Area streams were sampled. Results indicate that the acid neutralizing capacity (ANC) for 3 of the streams was >50 microequivalents/liter (µeq/l) falling in the 'Not or Minimally Affected by Acidification' category. Only the Lower Caney Creek Trib (ANC 46.6) fell into the 'Sensitive to Acidification' category which is between 20-50 (µeq/l) in that stream. None of the wilderness area streams that were sampled fell into the 'Episodically Acidic' (0-20 µeq/l) or the 'Chronically Acidic' (<0 µeq/l) categories. Sampling occurs annually at Caney Creek WA.

Classification	ANC in ueq/l (microequivalents /liter)	Biological Response
Chronically Acidic	< 0	**Complete loss of fish populations is expected.**
Episodically Acidic	0-20	**During episodes of acidification, sensitive species such as brook trout may experience lethal effects.**
Sensitive to Acidification	20-50	**Fish species richness greatly reduced. Sub-lethal effects to brook trout. Acid sensitive species or life stages subject to episodic mortality.**
Minimally Affected by Acidification	50-100	**Fish species richness may begin to decline. Brook trout response variable, sub lethal effects possible.**
Not Affected by Acidification	>100	**Fish species richness unaffected. Reproducing brook trout expected where habitat is suitable.**

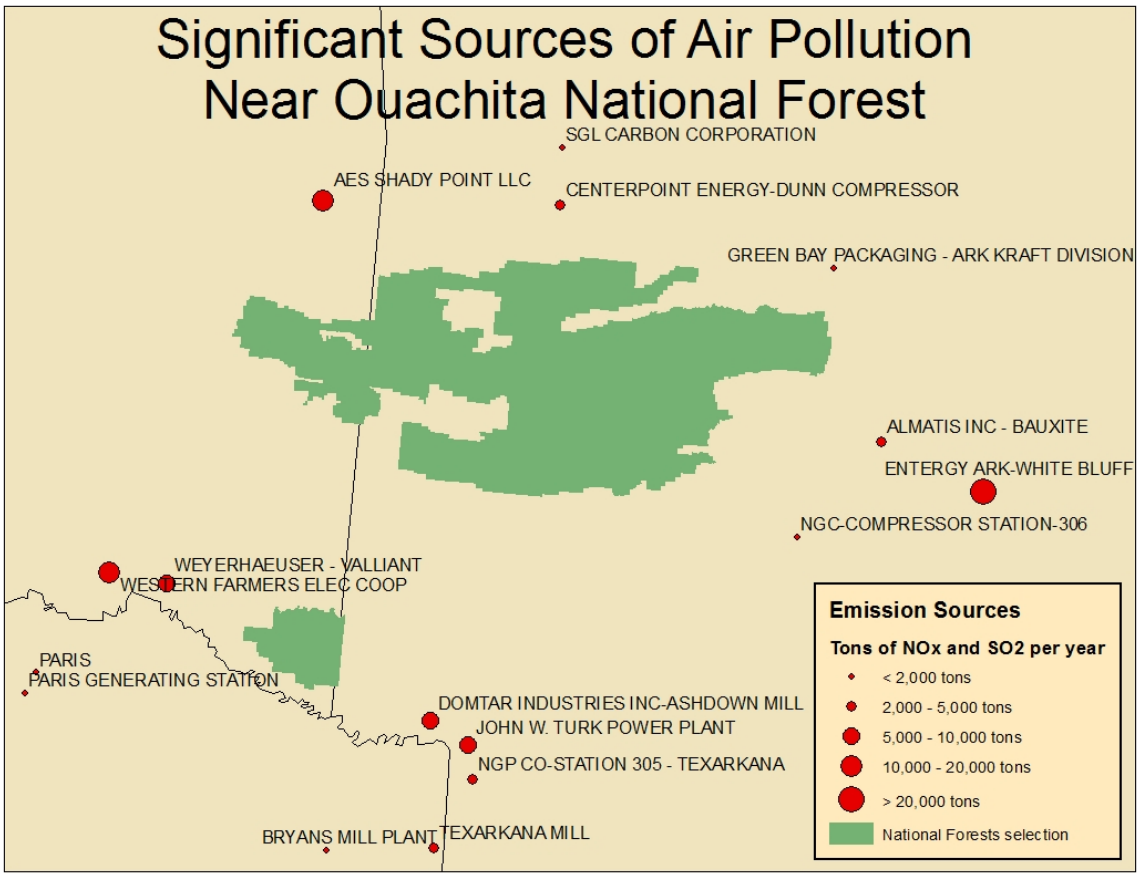
Good
Caution
Negative Impacts
Bad--Stream dead

Caney Creek Wilderness Area (pH)				
	2010	**2011**	**2012**	**2013**
Blaylock Tributary	7.2	7.2	6.5	7.1
Lower Caney Crk Trib	6.8	6.6	6.0	6.6
Upper Caney Crk Trib	6.9	6.8	6.3	6.9
Caney Creek	6.6	6.7	6.1	7.1
Upper Kiamichi Wilderness Area (pH)				
	7.1	**2011**	**2012**	**2013**
Pashubbe Creek	6.6	Dry	5.7	No Sample
Kiamichi River	6.9	5.8	6.2	No Sample
Kiamichi R. Trib	7.1	6.1	6.2	No Sample
Dry Creek Wilderness Area (pH)				
	6.6	**2011**	**2012**	**2013**
Upper Dry Creek	6.9	6.5	6.2	No Sample
Dry Creek Tributary	7.1	6.7	6.3	No Sample
Lower Dry Creek	6.8	6.5	6.3	No Sample
Flatside Wilderness Area (pH)				
	6.6	**2011**	**2012**	**2013**
Little Cedar Crk W Br.	6.9	6.7	7.1	No Sample
Crystal Prong	7.1	7.2	7.2	No Sample
Little Cedar Trib	6.2	6.2	7.1	No Sample

Caney Creek Wilderness Area (ANC/Alkalinity)				
	2010	**2011**	**2012**	**2013**
Blaylock Tributary	148.4	220.1	118.5	129.5
Lower Caney Crk Trib	63.1	81.5	51.3	46.6
Upper Caney Crk Trib	104.8	117.7	80.3	84.4
Caney Creek	42.1	62.1	44.8	137.7
Upper Kiamichi Wilderness Area (ANC/Alkalinity)				
	2010	**2011**	**2012**	**2013**
Pashubbe Creek	22.4	Dry	58.5	No Sample
Kiamichi River	55.1	62.7	56.8	No Sample
Kiamichi R. Trib	50.5	67.9	54.1	No Sample
Dry Creek Wilderness Area (ANC/Alkalinity)				
	2010	**2011**	**2012**	**2013**
Upper Dry Creek	97.7	78.9	99.1	No Sample
Dry Creek Tributary	129.5	100.6	159.2	No Sample
Lower Dry Creek	89.5	80.2	90.8	No Sample
Flatside Wilderness Area (ANC/Alkalinity)				
	2010	**2011**	**2012**	**2013**
Little Cedar Crk W Br.	108.0	272.2	275.9	No Sample
Crystal Prong	200.8	434.0	502.4	No Sample
Little Cedar Trib	62.3	124.6	100.8	No Sample

In summary, the WAs on the Ouachita NF are in an area of relatively low emissions compared to other WAs in the Region. The largest stationary sources of SO_2 and NOx emissions within 100 kilometers of these wildernesses are electrical generating units (power plants) and paper mills as depicted in the following figure.

Point Sources of Sulfur Dioxide and Nitrogen Oxide Emissions



Wild and Scenic Rivers

For additional information, contact Bill Jackson at williamjackson@fs.fed.us

The National Wild and Scenic Rivers System (NWSRS) was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations and to safeguard the special character of these rivers. Management Area 20, Wild and Scenic River Corridors and Eligible Wild and Scenic River Corridors, containing approximately 26,571 acres, was established on the Ouachita NF to manage river segments designated or eligible for consideration as components of the NWSRS.

Currently, the Cossatot and Little Missouri rivers are the only designated Wild and Scenic Rivers within the Ouachita NF. The eligibility and suitability of the Glover River in McCurtain County, Oklahoma was studied as part of an amendment to the 1990 Forest Plan, completed in 2002, and described in Appendix B of the EIS for that amendment with a recommendation that 16.5 miles be added to the NWSRS with a designation of “scenic.” A review of other eligible rivers for the Forest Plan revealed none suited for recommendation by the Ouachita NF as additions to the NWSRS, because most were bordered by too little NFS land. A local proponent would need to champion the designation of the Glover River for formal designation as a part of the NWSRS. Rivers may be designated by Congress or, if certain requirements are met, the Secretary of the Interior. Each designated river or river segment is administered by either a federal or state agency.

Semi-Primitive Areas

For additional information, contact Bill Jackson at williamjackson@fs.fed.us

Management Area 17, Semi-Primitive Areas, consists of approximately 136,091 acres and are areas that (a) meet the Recreation Opportunity Spectrum criteria for motorized and non-motorized semi-primitive recreation settings and (b) are not included in other MAs. Wilderness areas (MA 1), the Poteau Mountain Area (MA 1b), portions of some special interest areas (MA 2), and National Forest lands around Broken Bow Lake and Lake Ouachita (MA 16), for example, also offer either semi-primitive motorized or non-motorized recreation opportunities or both.

Scenery Management

For additional information, contact Bill Jackson at williamjackson@fs.fed.us

Projects that occur within Management Area 2, Special Interest Areas, Management Area 16, Lands Surrounding Lake Ouachita and Broken Bow Lakes, and Management Area 19 are among the many focus areas where Scenery Integrity Objectives are of very high priority. A Forest working group, see Appendix C responded to an issue developed as a part of the 10-Year Review: "The Revised Forest Plan references landscape architect consultation and concurrence; Region 8 no longer employs landscape architects at the forest level." The following is recommended:

1. Administrative change to adjust Revised Forest Plan language to reflect changed condition.
2. In lieu of landscape architect consultation, develop a protocol to determine analysis steps and technical requirements based on SIOs and visually sensitive MAs.
3. Develop a GIS tool to identify "seen areas" for project-level planning.
4. Continue to reference the *Scenery Treatment Guide – Southern Regional National Forests* (April 2008) for project-level mitigation/technical requirements/design criteria to meet Revised Forest Plan direction pertaining to SIOs.

MA 2 – Special Interest Areas

Management Area 2, Special Interest Areas, is devoted to areas of the Ouachita NF that possess characteristics of unique features, most with high quality scenery. Within this Management Area there are approximately 26,989 total acres, including the following:

2a. Scenic Areas, approximately 2,700 acres
2b. Watchable Wildlife Areas, approximately 5,853 acres
2c. Botanical Areas: Rich Mountain, approx. 3,200 acres, and South Fourche, approximately 2,580 acres (the Cove Creek Lake Project Area, approximately 324 acres surrounded by the South Fourche Botanical Area, is specifically excluded from the botanical area)
2d. Rich Mountain Recreation Area, approximately 12,980 acres

Special Interest Areas consist of Scenic Areas, Watchable Wildlife Areas, 2 Botanical Areas, and a large, undeveloped recreation area (Rich Mountain). There are areas specifically designated as scenic areas (shown in the following), and 3 of these—Blowout Mountain, Dutch Creek, and Crystal Mountain—are also designated to sustain characteristics of old growth shortleaf pine-hardwood forests.

Scenic Area – MA 2a.	Ranger District	Acres
Blowout Mountain	Oden	526
Dutch Creek Mountain	Cold Springs, Fourche	624
Crystal Mountain	Caddo, Womble	100
Irons Fork	Jessieville	1,450

Two designated Watchable Wildlife Areas are listed as part of Management Area 2: Red Slough (5,815 acres) on the Tiak Unit of the Oklahoma Ranger District and Richardson Bottoms (38 acres) on the Jessieville Unit of the Jessieville/Winona/Fourche Ranger District. Other Watchable Wildlife Areas, such as Buffalo Road Shortleaf Pine-Bluestem Restoration Area Auto Tour and Blue Moon Wildlife and Fisheries Demonstration Area in Management Area 22, are found throughout the Ouachita NF within other MAs. Rich Mountain Botanical Area and Rich Mountain Recreation Area are on the Mena Ranger District.

There are 2 congressionally designated botanical areas in Oklahoma-Beach Creek Botanical Area and Robert S. Kerr Memorial Arboretum, Nature Center, and Botanical Area; and they are addressed in MA 19 along with the other non-wilderness areas designated by the Winding Stair Mountain National Recreation Area and Wilderness Act.

MA 16 – Lands Surrounding Lake Ouachita and Broken Bow Lake

Management Area 16, Lands Surrounding lake Ouachita and Broken Bow Lake, containing approximately 87,153 acres, includes NFS lands surrounding Lake Ouachita in Arkansas and Broken Bow Lake in Oklahoma. All management activities within this area are designated to address wildlife and recreation objectives and protection of resource values for each lake. The overriding objective is to sustain the unique combination of representative recreational, aesthetic, wildlife, and water quality values. Scenic integrity is to be maintained so that visitors on the lakes or shorelines view the surrounding lands as predominately naturally-appearing with little or no addition of road miles to the transportation system. Portions of this MA are suitable for some timber management activities; other such as steep slopes are unsuitable.

In addition to maintaining the scenic integrity of the Special Interest Areas and the Lands Surrounding Lake Ouachita and Broken Bow Lake, there is a specific Forest Plan Objective that addresses scenic overlooks (all of which are not located within MA 16)

OBJECTIVE 28: Improve or maintain all designated scenic overlooks at least once per decade.

Of 38 scenic overlooks on the Forest, all were maintained within the last 10-year period.

MA 19 – Winding Stair Mountain Recreation National Area

Management Area 19, Winding Stair Mountain Recreation National Area and Associated Non-Wilderness Designations, consists of approximately 79,897 acres and contains lands designated by the Winding Stair Mountain National Recreation and Wilderness Area Act of 1988, Public Law 100-499, except for the 2 wilderness areas, which are included with other Forest wilderness in MA 1, Wilderness. A variety of outstanding recreational opportunities exists in MA 19, including the Talimena Scenic Drive. No management changes are recommended for this MA.

Winding Stair Mountain Recreation National Area by Name and Acreage, ONF

Area Name*	Acres
19a. Winding Stair Mountain National Recreation Area	25,890
19c. Robert S. Kerr Memorial Arboretum, Nature Center, and Botanical Area	8,256
19e. Beech Creek Botanical Area	380
19f. Beech Creek National Scenic Area	6,200
19g. Indian Nations National Scenic and Wildlife Area	29,171

*19b and 19d (Rich Mountain Recreation and Botanical Areas in Arkansas) from the 1990 Forest Plan were moved into MA 2, Special Interest Areas.

MA 3 – Developed Recreation Areas

For additional information, contact Bill Jackson at williamjackson@fs.fed.us

There are approximately 5,189 acres devoted to developed recreation encompassing some 118 separate sites on the Ouachita NF; of these, several are Forest Service-operated fee sites. Development ranges from an essentially natural environment with few facilities to a high degree of site development with comfort and convenience facilities, including features such as paved roads, water systems, flush toilets, and bloat launching ramps. Included within this management unit are campgrounds, picnic areas, horse camps, interpretive and observation sites, information sites, shooting ranges and swimming areas.

There are 2 Forest Plan Objectives that govern developed recreation:

OBJECTIVE 24: *"Maintain all recreation facilities to standard."*

At present, 159 of 162 recreation facilities are maintained to standard. "To standard" is calculated by the amount of deferred maintenance as a percentage of current replacement value. Use the Forest Service definition, the Ouachita NF is accomplishing 99% percent of the target of the maintained to standard measurement.

OBJECTIVE 25: *"Improve accessibility within at least one recreation site per year."*

This objective was attained with improvements to Camp Clearfork with the installation of new hardened trail surfaces throughout the recreation area to improve accessibility from overnight facilities to other recreation facilities at the site.

Fee Sites

For additional information, contact Bill Jackson at williamjackson@fs.fed.us

Recreating fee dollars are an investment in outdoor recreation. They support and enhance:

- Public Safety
- Recreation Site Maintenance and Improvements
- Educational Experiences
- Informational Wayside Exhibits
- Youth Programs and Partnerships
- Interpretive Programs

Occupancy rates are not tracked at non-fee sites. Of the recreation sites that are operated as fee sites, occupancy rates are not developed for the 5 day-use areas (at Cedar Lake, Lake Sylvia, Shady Lake, Little Pines, and Charlton recreation areas). The following shows data through 2016 for the 9 recreation sites where fees are collected.

The decrease in fee collections for 2012 through 2015 is due to closures of several campgrounds and individual campsite units due to flash flooding concerns. 2012 figures are also likely influenced by a mid-year change to a new accounting and collection system.

Trails

For additional information, contact Tom Ledbetter at tledbetter@fs.fed.us

The Forest provides a diverse array of trails including equestrian, off-highway-vehicle (OHV), hiking/mountain bike and interpretive. Primary trail-based opportunities occur in the Wolf Pen Gap OHV area, along the Ouachita National Recreation Trail, on the Cedar Lake Equestrian trail system in Oklahoma, the International Mountain Bicycling Association (IMBA) Epic Womble and Lake Ouachita Vista (LOViT) Trails. Mountain biking is fast becoming one of the most important niches that the Forest can support and currently provides over 200 miles of single-track trail for the mountain bike enthusiast. Key to the development and maintenance of these trail systems is the involvement of dedicated, well-trained volunteer trail enthusiasts such as the Friends of the Ouachita Trail (FoOT), the Trail Dogs and Oklahoma Equestrian Trail Riders.

Trail maintenance on Lake Ouachita Vista Trail.

Objective 23 of the Forest Plan is specific to trails: *"Conduct maintenance on at least 300 miles of trail (non-motorized use) per year."*

Thanks to the efforts of volunteer trail groups and district employees, the Ouachita NF accomplishes more maintenance each year than the annually assigned target of 292 miles of non-motorized trail maintained to standard. It should be noted that in the past years, the Ouachita NF has reported non-motorized trail maintenance and motorized trail maintenance separately, but due to database structures, it is no longer possible to separate the 2 types of maintenance.

Demand for OHV riding opportunities is high on the Forest, and such demand presents management challenges to provide OHV riding places, protect natural resources, and balance recreational needs for quiet and solitude within the Ouachita NF.

Recreation Participation

For additional information, contact Bill Jackson or williamjackson@fs.fed.us

A preliminary Forest-level visit estimate obtained from the National Visitor Use Monitoring (NVUM) for 2015 is 1.189 million visits the Ouachita NF per year. This is an increase from the 2010 estimated 1.067 million visits to the ONF annually. As revealed in the survey, for the ONF, the greatest changes between 2010 and 2015 include 138,000 visit increase to General Forest Area (GFA) Low sites and a 121,000 visit decline in GFA Medium sites. No special events visits were recorded.

Public and Agency Safety

For additional information, contact Alissa Land at aland@fs.fed.us

The Forest Plan includes the following desired condition for law enforcement, *"A safe environment for the public and agency employees is provided on National Forest System land; natural resources and other property under the agency's jurisdiction are protected."*

A safe environment is critical for the public and agency employees on National Forest System lands as is protection of the natural resources and other property under the agency's jurisdiction. In 2016, the Law Enforcement and Investigation (LE&I) unit for the Ouachita NF administered 6 Cooperative Law Enforcement Agreements that support local county law enforcement assistance in Arkansas and Oklahoma. The number of Forest law enforcement officers (LEOs) in 2016 was 7 full-time and 2 in

"reserve" LEO status. The historic high of LEOs Forest-wide was 12. LEOs often work 120-150 hours per week compared to other employees who would normally work an 80-hour, 2-week pay period. During 2016, approximately 4,248 hours (equal to 531 days) of Administratively Uncontrollable Overtime were worked by the 7 LEOs and 2 Reserve Officers.

LEOs responded to or assisted with 19 accidents within/adjacent to the Ouachita NF. These numbers include minor injuries (sprains, dog bites, etc.), ATV, motorcycle and motor vehicle accidents. Eight accidents were motor vehicles, 4 ATV accidents, a single motorcycle accident and 5 personal injury/other accidents. There were a logging fatality and 2 suicides reported. Fourteen separate search and rescue (SAR) operations were conducted during 2016 for lost hikers and hunters. During 2016, LE&I investigated 7 assault cases.

Year	Motor Vehicle Accidents	ATV Accidents	Motorcycle Accidents	Personal Injury/Other Accidents	Search and Rescue
2011	19	7	4	12	20
2012	12	9	12	18	10
2013	14	3	2	1	9
2014	7	1	2	1	24
2015	43	12	2	8	21
2016	19	4	1	5	14

During 2016, a total of 629 Federal and State Violation Notices, 272 Warning Notices, and 356 Incident Reports were issued. Forty-four cases were initiated and 116 arrests were reported during FY 16. While Violation Notices were higher than previous years, Warnings and Incidents were comparable and represented an extremely heavy workload for available personnel.

Violations, Notices, and Incident Reports by FY, ONF

Fiscal Year	Violations	Warning Notices	Incident Reports
2010	581	394	628
2011	487	474	476
2012	354	262	364
2013	542	344	339
2014	570	282	374
2015	541	290	353
2016	629	272	356

Officers investigated and assisted in 4 felony drug cases and 61 simple possession (misdemeanor) drug cases. In 2016, approximately 2,656 marijuana plants were located during joint operations within and adjacent to NFS and eradicated. Approximately 24 pounds of marijuana, nearly 3 grams of methamphetamine, and 6 grams of cocaine was seized along with 22 items of paraphernalia. Two hundred fifty-five DUI and public intoxication and alcohol possession incidents were documented. Forty-four fires were investigated of which 33 were determined to be arson or human caused fires. Eighty nine separate ATV violations were recorded for FY 16. The following show these data since 2006, the first full year of monitoring for the 2005 Forest Plan.

Eradications, Arrests, and Investigations by FY

FY	Marijuana Plants	Methamphetamine Grams Seized	Investigations	Felony Drug Cases	Misdemeanor Drug Cases	Arson cases
2006	6,300	Data Not Reported 2006-2013	97	41	51	*
2007	8,775		89	29	98	*
2008	742		97	36	50	19
2009	33,940		116	27	82	39
2010	300		105	27	68	13
2011	124		86	17	44	50
2012	4,200		74	35	42	50
2013	8		46	15	66	16
2014	600	9	39	27	42	18
2015	4,510	4	47	17	59	13
2016	2,656	2.62	47	4	61	33

***Arson cases occurred and were investigated during 2006 and 2007; however, the data were not reported in the Monitoring and Evaluation Reports.**

Outreach projects include purchase of a marine patrol boat in 2013 which is to address alcohol and fishing violations on Forest Service lakes and assist in night hunting violations. This equipment is an addition to the ATV Razor acquired in 2012 to address violations on ATV trails. There were 0 fatalities during 2013 and 2014; however, there was 1 ATV fatality in 2015. There were no ATV fatalities in 2016 The Ouachita NF has an active K9 program that has provided dozens of assists to state, county and local LE agencies in addition to the numerous cases initiated on the Forest. The LEO/K9 team presents a variety of programs and demonstrations to local schools to educate youth about the dangers of drug use. In 2016 K9 Rambo was retired and replaced with Dunja (pronounced Doon ya).

Officers conducted/assisted with 16 compliance checkpoints to address the growing traffic, ATV and alcohol violations occurring as a result of increased public visitation on the Ouachita. A total of 61 timber compliance checkpoints were performed in 2016.

Ouachita NF Law Enforcement personnel spent 70 hours in public relations and training programs. Forest LEO's traveled approximately 200,000 miles in 2016 in support of public and agency safety, as well as protection of natural resources and property. Law Enforcement reports show a total of 17,159 public contacts during 2016. A comparison of public Relations Program Hours, Miles Traveled and Public Contacts made by is provided in the following.

Public Relations Programs, Miles Traveled and Public Contacts, by FY, ONF

Fiscal Year	Public Relations Program Hours	Miles Traveled	Public Contacts
2006	32*	196,423	12,236
2007	252	229,220	19,375
2008	270	206,436	22,811
2009	187	200,000	14,839
2010	103	240,000	20,067
2011	123	260,000	22,315
2012	166	208,000	22,271
2013	228	212,000	18,436
2014	82	192,000	16,304
2015	90	180,000	15,019
2016	70	200,000	17,159
*Data reported are programs, not hours, as reported in subsequent years.			

Heritage Resources and Stewardship

For additional information, please contact Roger Coleman at recoleman@fs.fed.us

Heritage Resources are addressed by reporting Heritage Stewardship and Tribal and Native American Interests.

The Forest Plan objectives for Heritage Stewardship follow:

> *OBJ20. Complete a Forest overview of heritage resources by 2007 incorporating the results of 20+ years of Section 106 and Section 110 work and documentation.*
>
> *OBJ21. Drawing upon the heritage resources overview, complete a Heritage Resources Management Plan by 2010.*
>
> *OBJ22. Revise the Programmatic Agreement with SHPOs and THPOs by 2011.*

Review of Progress toward Desired Condition, Priorities, and Objectives

The Heritage Overview is complete and consultation with tribal and state consulting partners is concluded. The document was completed in 2013 and is available in electronic format (OBJ20). A Heritage Resources Management Plan, based on the Heritage Overview and forest-wide land type associations is under production (OBJ21).

During 2016, the State Historic Preservation Officers of Arkansas and Oklahoma and several tribes agreed to extend for another year the existing programmatic agreement with the Forest Service (Ouachita and Ozark-St. Francis National Forest), an agreement that guides

implementation of National Historic Preservation Act Section 106 procedures on these national forests. The present agreement expires in May, 2017. A new PA is drafted and consultation is ongoing (OBJ22). The new draft PA streamlines Section 106 consultation and implements the new Forest Service National Heritage Program Management Strategy.

In 2016, 30 projects, including watershed scale timber sales with associated actions, were completed. Consultation on these undertakings occurred with one or more state historic preservation officers, one or more state archeologists, and with tribal historic preservation officers for the Choctaw, Chickasaw, Quapaw, Caddo, Wichita, and Osage nations. This year, 22,406 acres were surveyed and 92 archeological sites were identified or revisited. Following consultation on determinations of National Register eligibility, 31 sites were protected from project impacts. Additionally, 107 projects met stipulations of the current PA, held no potential to impact archeological sites, and were processed as categorical allowances.

Priority Heritage Assets (PHAs) are heritage sites with public value that meet one or more of the following criteria:

- The site has an official designation like listing on the National Register of Historic Places.
- There is a prior investment in preservation, interpretation, and use.
- The site is recognized in an agency-approved management plan.
- The site exhibits critical deferred maintenance needs and those needs have been documented (where critical deferred maintenance is a potential health or safety risk or imminent loss of significant resource values).

PHAs are monitored on a 5-year rotation. For 2016, the Ouachita had 192 archeological and historic sites on the PHA list. Twenty-nine PHAs were actively monitored and 7 PHAs were managed to standard. Other heritage assets including structures and archeological sites may be potentially important, however, they are currently unevaluated or do not have a demonstrated need for active maintenance.

Archeological collections are Priority Heritage Assets. In 2016, additional efforts were made to prepare collections for curation. Four hundred, ninety-nine volunteer hours were donated in this effort for a dollar value of $5,523.93. Curation activities are ongoing.

Additionally, in 2016 heritage staff conducted public outreach at 8 venues including a flint knapping demonstration; history and archeology programs for the Ouachita Chapter of the Arkansas Archeological Society; and by staffing booths at county fairs. An informative display on prehistoric use of novaculite was set-up in Mt. Ida. Arkansas Archeological Survey archeologists published an article on the joint FS/AAS project at the Dragover Site. Ouachita and Ozark St. Francis personnel published an article on development of a joint programmatic agreement.

Tribal and Native American Interests

For additional information, please contact the Ouachita National Forest at recoleman@fs.fed.us

In addition to the objectives listed under Heritage Stewardship, the Forest Plan identifies a desired condition that the *"Forest has active agreements and protocols to facilitate consultation (all resources) and government-to-government relationships."*

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 provides a process for identifying and returning cultural patrimony to Native Americans. In 2014, to implement the act, the Caddo Nation of Oklahoma and the Choctaw Nation of Oklahoma signed comprehensive NAGPRA agreements with the USDA Forest Service (Ouachita and Ozark-St.

Francis National Forests). These agreements represent positive steps toward stronger Government-to-Government relationships with these Tribes. To date, all archeological collections curated by the Ouachita NF have been examined for faunal materials. Analysis revealed several small human bone fragments representing 12 individuals of Choctaw or Caddo affiliation from seven Oklahoma sites. After briefing the Caddo and Choctaw nations, Ouachita NF published the Notice of Inventory Completion (NIC) in the Federal Register. The 30-day period for comments ends April 12, 2017. Tribal reburial requests will be dealt with on a case-by-case basis.

The *To Bridge A Gap* conference is an annual government-to-government meeting between federal agencies and Native American tribes. Initiated in 2002, the meeting is a successful forum that promotes intergovernmental collaboration and information exchange. From April 11 to April 14 2016, the 15th annual TBAG meeting was hosted by the Coushatta Tribe in Kinder, Louisiana. Karen Diver, special assistant to the president for Native American affairs was keynote speaker. The 2016 meeting featured more than 254 registered attendees representing 15 federal agencies, 23 Tribes, and 32 contractor/state organizations. The Forest Service hosted an on-site recruitment event for recent graduates to apply through the Pathways Internship Authority. Eleven individuals were hired.

From June 15 -17, 2016, heritage paraprofessional training was conducted at the Oden Ranger Station in Oden, Arkansas. ONF heritage personnel served as trainers, collectively instructing 29 individuals including 10 members of the Choctaw and Osage nations. Many of our tribal consulting partners now have heritage paraprofessional programs and under Forest Service and tribal participating agreements, some tribal members conduct heritage surveys on the ONF.

Heritage Resources—Emerging Issues

With the release of Forest Service Manual (FSM) 2360—Heritage Program Management in July 2008, Washington office staff and regional heritage program managers began a critical review of performance program indicators and their relevance to the new manual direction. This review led to development of a new performance measure. The new measure, Heritage Program Managed to Standard (HPMtS) was implemented in FY2012. The seven indicators in the HPMtS measure correspond to key elements in FSM 2360 and accurately gauge program responsibilities and accomplishments:

1) A heritage program plan is in place for the national forest that includes all the elements listed as 1-7 in FSM 2362.3—Heritage Program Planning.
2) Field survey of national forest system lands where cultural resources are most likely to occur is conducted in accordance with Section 110 of the National Historic Preservation Act, the Archaeological Resources Protection Act, and Executive Order 11593.
3) Legacy cultural resources (previously recorded cultural resources that are unevaluated) are evaluated for eligibility to the National Register of Historic Places.
4) Condition assessments on Priority Heritage Assets (including heritage collections) are current and include allocation to management categories to guide the asset's protection and use (FSM 2362.4—Historic Property Plans, FSM 2363.3—Allocation of Cultural Resources to Management Categories, FSM 2364.3—Long Term Protection, FSM 2366—Management of Heritage Collections).
5) Cultural resource stewardship activities are accomplished to protect and maintain Priority Heritage Assets (FSM 2364.36—Direct Protection Measures, FSM 2364.42—Conservation and Maintenance of Cultural Resources.
6) Opportunities for study and/or public use offered including scientific investigation, public dissemination of research results, adaptive reuse of historic properties, traditional use,

interpretation, or other public outreach through Windows on the Past projects (FSM 2364.43—Study and Use of Historic Properties, FSM 2365.2—Windows on the Past).

7) Volunteer hours are contributed to activities that enhance cultural resource stewardship and conservation and expand the capacity, visibility, and delivery of the heritage program (FSM 2365.1 Criteria for Heritage Public Education and Outreach, FSM 2365.2—Windows on the Past).

Heritage performance-measure accomplishments are reported in NRM Heritage—the national system of record and upward reporting for all heritage data relating to cultural resources, compliance work, and artifact assemblage information. To meet agency reporting requirements, target allocations, and budget allocations, the heritage program must maintain an up-to-date data set with both transactional and spatial data. These data will determine that forest units have met their assigned annual HPMtS target. The Forest Plan may need to be amended to include these new heritage standards and procedures.

Performance History

Contributions of the Ouachita National Forest to Social & Economic Sustainability

For additional information, contact Alett Little at alittle@fs.fed.us

The Ouachita NF is important to many local economies in terms of providing employment and in providing products, services, recreational visits, contracting, and other sources of revenue that then multiply to support local communities; and this support has remained fairly stable over the years. The timber sale program contributes to the economic base of local communities as do the recreational opportunities that bring visitors to the Forest and surrounding communities. Some other Forest contributions are difficult to quantify. One type of economic contribution to counties, however, is clear as described in the following section on payments to counties in lieu of taxes.

Payments to Counties

For additional information, contact Caroline Mitchell at carolinemitchell@fs.fed.us

An important source of revenue for many counties that include National Forest System lands within their borders is payments received from the US Forest Service. For 2016, with no Congressional reauthorization of the Secure Rural Schools and Community Self Determination Act (SRS Act), the Forest Service must revert to making payments to States under the 1908 Act, commonly called the 25% payments. For the 2016 receipts. USDA Forest Service will process a payment in early 2017.

The Act of May 23, 1908 (35 Stat. 260; 16 U.S.C. 500), and section 13 of the Act of March 1, 1911 (36 Stat. 963; 16 U.S.C. 500) was amended by P.L.110-343 such that the 25% payment is "an amount equal to the annual average of 25 percent of all amounts received for the applicable fiscal year and each of the preceding 6 fiscal years." Each State and County is accountable for the proper use of funds under the Single Audit Act.

Payments to Counties 2006 – present, ONF
Note: Funds are not paid until the following year.*

Year/ Co.	Arkansas													Oklahoma	
	Ashley (003)	Garland (051)	Hot Spring (059)	Howard (061)	Logan (083)	Montgomery (097)	Perry (105)	Pike (109)	Polk (113)	Saline (125)	Scott (127)	Sebastian (131)	Yell (149)	LeFlore (079)	McCurtain (089)
2006	3,539	454,370	676	3,235	42,505	1,243,580	387,420	21,847	648,426	184,787	1,456,962	64,570	695,433	974,175	264,770
2007	2,869	453,437	548	2,622	42,418	1,241,027	328,632	22,957	687,539	216,951	1,165,618	64,438	694,006	972,176	264,226
2008	6,633	321,296	571	5,820	70,754	1,467,711	324,278	31,344	876,424	146,405	1,614,725	38,467	801,940	956,344	383,889
2009	6,235	291,494	568	5,200	50,287	1,325,823	260,347	29,111	832,968	124,858	1,456,841	35,477	733,059	842,016	350,417
2010	4,970	276,302	549	5,085	45,922	1,290,494	237,031	25,179	890,615	112,788	1,577,973	34,226	666,927	773,112	347,835
2011	4,233	211,103	561	4,956	43,652	1,158,828	219,113	23,132	759,411	95,534	1,500,621	31,424	614,500	674,238	309,374
2012	3,412	229,758	530	4,495	38,414	1,111,849	187,900	24,170	683,118	91,072	1,386,118	31,118	569,457	651,328	265,335
2013	2,573	185,034	492	4,827	35,367	1,107,819	187,993	25,732	632,456	87,389	1,340,211	28,399	576,372	645,564	269,341
2014	2,318	166,642	444	4,121	33,614	998,289	193,351	21,857	565,027	88,963	1,091,255	27,575	486,532	619,979	254,783
2015	2,080	149,490	399	3,566	24,371	911,888	216,871	23,918	504,739	113,475	957,404	31,931	463,814	527,602	244,047
2016*	1,966	141,145	378	1,795	87,773	393,620	115,912	15,734	240,481	69,063	431,724	22,110	247,346	259,036	155,222

Source: https://www.fs.usda.gov/main/pts/home
*Reverted back to 1908 Act. These amounts will be distributed in 2017 and are estimated and subject to a 6.9% sequestration.

These annual payments (plus additional payments processed through the Department of the Interior) have provided some stability and predictability for funding to the counties since 2000, when Congress passed the Secure Rural Schools Act (SRS). The SRS Act was reauthorized by section 524 of P.L. 114-10 and signed into law by the President on April 16, 2015. Prior to SRS Act reauthorization, the 1908 Act, as amended, required 25-percent rolling average payments governed the distribution of payments to States for the 2015 payment year. The 25-percent payments are based on a 7-year rolling average of receipts from national forests located in the State. The 25-percent payments to States made under the 1908 Act, as amended, were subject to a 6.9% sequestration.

The actual amount of each state's payment is determined by a number of factors determined by law, including how many counties ultimately decide to share in that payment. Each county's share of their state's payment amount can be found on this Forest Service website: http://www.fs.usda.gov/main/pts/securepayments/projectedpayments.

In addition to payments made by the Forest Service to Oklahoma and Arkansas for counties that contain National Forest System lands, many counties participate actively in Title II of the SRS Act, including the 8 counties shown in the following that include lands of the Ouachita National Forest. Title II projects are recommended by resource advisory committees and may be used for the for protection, restoration, and enhancement of fish and wildlife habitat and other resource objectives consistent with the SRS Act on Federal land and also on non-Federal land if such projects would benefit the NFS resources. With no reauthorization of the Secure Rural Schools and Community Self Determination Act (SRS Act), the Forest Service must revert to making payments to States under the 1908 Act.

County	Title II Funds ($) Distributed, by year, ONF Note: Distributions determined by previous years' receipts			
	2012 Funds Received in 2013	2013 Funds Received in 2014	2014 Funds Received in 2015	2015 Funds Received in 2016
Logan, AR	9,582	8,821	8,382	6,071
Montgomery, AR	277,575	259,510	233,802	213,535
Perry, AR	46,861	33,098	34,040	38,191
Polk, AR	170,542	157,889	141,021	125,949
Scott, AR	303,896	293,836	239,171	209,789
Yell, AR	49,442	50,047	42,231	40,256
LeFlore, OK	114,940	113,923	109,408	93,106
McCurtain, OK	46,824	47,531	44,962	43,067

2016 Source: Final Title I, II and III Report PNF (ASR-18-01)

Budget

For additional information, contact Diane Lowder at dlowder@fs.fed.us

The Forest Plan management areas, management prescriptions, and standards represent statements of long-term management direction. Such direction and the rate of implementation are largely influenced by and dependent on the annual budgeting process. The NFS allocated funds for the Ouachita NF in Arkansas and Oklahoma without earmarks or returns on receipts of timber sales under Knutson-Vandenberg (KV)* for the time period 2006 through 2016 are shown in the following:

Allocated Funding 2006-2016, by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
$ (in Millions)	8.5	6.8	8.8	11.7	10.5	9.8	11.8	8.7	10.3	10.0	10.3

Source: Ouachita NF

*The KV Act of 1930, as amended, established a funding mechanism for wildlife and fisheries, timber, soil, air, and watershed restoration and enhancement projects. Projects are restricted to timber sale areas and are funded from receipts generated from those timber sales on those areas.

The Ouachita NF comprises approximately 4.2 percent of the land base of the state of Arkansas and less than 1% of the total land area in Oklahoma. In Arkansas, Ouachita NF System lands occupy a high of 67% to a low of 0.08% of total lands by county. Within the 2 Oklahoma counties, National Forest System lands occupy 22% of LeFlore County and 11% of McCurtain County. The following displays the amount and percentages of Ouachita NF lands in each county and within each state as a whole:

Lands by State and County, September 2010 - 2016

State/County	Acres (1,000)	Ouachita NF Acres 2010	Ouachita NF Acres 2011	Ouachita NF Acres 2013	Ouachita NF Acres 2014	Ouachita NF Acres 2015	Ouachita NF Acres 2016	Ouachita NF Percent of State or County 2016
ARKANSAS	34,034.6	1,434.9	1,434.7	1,434.7	1,434.7	1,434.7	1,434.7	4.22
Ashley	589.4	1.7	1.7	1.7	1.7	1.7	1.7	0.28
Garland	433.3	120.6	120.6	120.6	120.6	120.6	120.6	27.83
Hot Spring	393.6	320	320	320	320	320	320	0.08
Howard	375.7	1.5	1.5	1.5	1.5	1.5	1.5	0.41
Logan	454.4	18.6	18.6	18.6	18.6	18.6	18.6	4.09
Montgomery	499.8	336.8	336.8	336.8	336.8	336.8	336.8	67.39
Perry	352.6	99.2	99.2	99.2	99.2	99.2	99.2	28.12
Pike	385.9	13.4	13.4	13.4	13.4	13.4	13.4	3.48
Polk	549.8	206.4	206.3	206.3	206.3	206.3	206.3	37.50
Saline	462.70	59.0	59.0	59.0	59.0	59.0	59.0	12.74
Scott	572.2	369.6	369.6	369.6	369.6	369.6	369.6	64.59
Sebastian	343.0	19.0	19.0	19.0	19.0	19.0	19.0	5.53
Yell	593.9	188.8	188.8	188.8	188.8	188.8	188.8	31.79
OKLAHOMA	43,946.9	355.0	355.0	355.0	355.0	355.0	355.0	0.81
LeFlore	1,015.0	221.9	221.9	221.9	221.9	221.9	221.9	21.87
McCurtain	1,185.3	133.0	133.0	133.0	133.0	133.0	133.0	11.22

Source: Ouachita NF – 2012 acres not reported.

There were no substantive changes in the total acres managed under the National Forest System over the past several years, including 2016.

Summary - Resource Management Accomplishments

The following table summarizes resource management accomplishments for the Ouachita NF from 2003 to 2016.

Objective or Activity	FISCAL YEAR													
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Miles of Trail Construction	6	6	0	5	5	4	5	24	24	3	5	5	0	0
Miles of Trail Maintenance	293	288	293	299.8	300	245	244	150	150	281	211	271	328	260
Acres of Heritage Resource Survey	6,490	22,930	20,046	16,176	22,460	10,444	21,965	6,597	6,211	10,988	10,227	11,591	10,025	22,406

# of Waterholes Developed	107	142	220	57	212	99	85	51	101	44	31	44	63*	13***
Acres of Midstory Reduction	3,014	353	1,350	7,715	4,935	2,410	5,965	5,159	5,362	5,035	6,408	3,651	3,734	1786***
Acres of Prescribed Fire	128,319	134,386	96,376	43,093	145,354	120,748	120,125	142,817	96,720	101,529	96,165	99,127	76,104	130,283
Acres of Lime, Fertilize/Stock Lakes/Ponds	647	670	828.5	970	1,281	558	474	548.5	696	702	593	743	639	526
# Livestock	1,179	903	715	530	300	154	142	133	116	116	116	116	130	130
# Active Range Allotments	20	17	16	16	16	6	4	3	3	3	3	3	3	3
Acres of Watershed Improvement & Maintenance	35	56	73	87	45	41	75	64	118	505	1003	515	304	418
Cases - Minerals Administration	191	577	860	403	640	894	894	839	N/A	232	235	142	204	300
MMCF Timber Offered	13.11	17.77	20.02	7.57	19.86	21.52	16.17	20.47	19.88	16.13	18.19	13.34	20.73	21.4
MMCF Timber Sold	11.16	14.24	16.68	19.93	20.64	20.18	17.54	18.93	20.05	17.84	15.37	16.93	18.10	17.57
Miles of Land Line Location/Maintenance	39.5	77.0	80.0	52.6	65.0	135.4	136.5	114.02	105	99.75	40.00	56.58	62.00	56.00
Rights-of-way Cases	2	1	1	0	1	0	2	3	0	6	1	0	3	0
Miles of Arterial/Collector Roads Reconstructed	33	4	14	15.56	6.44	10.54	1.94	7.96	112.35	37.6	0.99	0.88	1.49	10.4
Local Roads Constructed	5	5	5	15.99	4.28	8.54	21.00	3.29	11.13	5.1	2.21	0.72	0.85	37.46
Acres of Soil Inventory	50,000	0	9,090	3,240	0	0	26,165	0	24,800	0	0	515	304	418
Stream Inventory Miles	N/A	N/A	N/A	46	10	10	10	10	46	24	27	25	12	54**
Stream Inventory For Leopard Darter Miles	N/A	N/A	N/A	8	8	8	8	7	7	8	8	7	8	8
# Fish Attractors	45	26	6	16	65	48	73	40	44	16	0	0	0	0
# Streams Monitored for Offsite Herbicide Movement	11	11	11	6	3	4	0	0	4	3	3	3	3	1

*Additionally 15 waterholes were rehabilitated in Oklahoma.
**46 miles for BASS and 8 miles for Leopard Darter
***Cold Springs/Poteau District did not report this item for 2016

Appendix A – Amendments to the 2005 Forest Plan

A List and Brief Description of Amendments to the 2005 Forest Plan (through September 2016)
1. Amendment # 1 - Non-significant **7/10/2008 (Wagoner) Reallocated an old growth restoration area within South Waldron Ridge and East Newman ecological management units.**
2. Amendment # 2—Non-significant **10/19/2009 (Wagoner) – Reallocated lands in MAs 9, 14, 17, and 21 to make Management Area boundaries easier to find and manage including the following:** • **Add areas that meet Recreation Opportunity Spectrum (ROS) criteria for motorized and non-motorized semi-primitive recreation settings to MA 17** • **Emphasize habitat diversity (MA 14) and Riparian Communities (Management Area 9), where appropriate.** • **Extend MA 17 boundaries north to include the entire Poteau Mountain OHV trail.** • **Align MA 17 and MA 21 boundaries with topographic changes or other physical features rather than section lines so these boundaries are easier to locate from the ground by anyone wanting to visit these areas.**
3. Amendment # 3—Non-significant **1/4/2010 (Wagoner) Under authority of 36 CFR 261.13, public use of motorized vehicles, including off-highway vehicles (OHVs), was limited to the designated routes, as identified on a motor vehicle use map (MVUM).**

Administrative Changes to the 2005 Forest Plan

A List and Brief Description of Amendments to the 2005 Forest Plan (through September 2016)
1. Administrative Change - ABB **1/29/15 (Wagoner) Corrected Plan language to refer to the most recent guidance on ABB from the Fish and Wildlife Service.**
2. Administrative Change – Monitoring **5/3/16 (Wagoner) Added monitoring questions to address Climate Change and removed one question relating to recreation.**

Appendix B - Projects under 2005 Plan

Unit	Span of Decision Dates	# Decisions*	# Vegetation (other than forest products)	# Fuels	# Wildlife, Fish, Rare Plants	# Forest Products	# Special Use	# Rec-reation	# Road	# Water-shed	# Minerals and Geology	# Heritage	# Land Mgmt Plng	# Land Acquisition/ Land Ownership	# Facility Mgmt	# Special Area	# Research	# Grazing
Caddo	12/15/2005 - 09/27/2010	35	8	12	5	16	7	1	3	4	2	0	0	2	0	1	0	0
Womble	11/02/2005 - 09/29/2010	61	16	14	5	12	8	12	3	3	11	0	0	0	3	1	0	0
Total Caddo/Womble		96	24	26	10	28	15	13	6	7	13	0	0	2	3	2	0	0
Choctaw	12/15/2005 - 05/31/2006	2	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0
Kiamichi	12/08/2005 - 08/26/2010	77	33	28	13	8	15	5	4	1	1	0	2	2	0	1	0	3
Tiak	11/30/2005 - 02/12/2006	6	4	1	2	1	2	0	0	0	1	0	0	0	0	0	0	1
Total Oklahoma		85	37	29	15	9	18	6	4	1	2	0	2	3	1	1	0	4
Cold Springs	12/05/2005 - 06/21/2010	24	16	8	5	2	4	6	6	6	3	5	4	1	0	0	0	0
Poteau	11/03/2005 - 02/24/2010	29	15	7	1	3	4	6	2	4	8	1	1	0	0	0	0	0
Total Poteau/ Cold Springs		53	31	15	6	5	8	12	8	10	11	6	5	1	0	0	0	0
Fourche	11/04/2005 - 03/26/2009	21	17	17	13	3	2	0	3	0	0	1	1	0	0	0	0	0
Jessieville	11/14/2005 - 08/19/2010	44	18	14	22	15	5	3	6	4	4	4	2	0	1	1	4	0
Winona	11/21/2005 - 09/08/2006	6	1	3	1	2	2	2	1	1	0	1	1	1	0	0	0	0
Total Jessieville/ Winona/ Fourche		71	36	34	36	20	9	5	10	5	4	6	4	1	1	1	4	0
Mena	12/12/2005 - 09/14/2010	46	12	25	23	11	11	9	8	8	0	5	0	1	2	3	0	0
Oden	04/14/2006 - 09/21/2009	16	9	5	7	7	5	6	6	7	0	7	0	0	0	0	0	0
Total Mena/ Oden		62	21	30	30	18	16	15	14	15	0	12	0	0	1	2	0	0
Ouachita/ Ozark NF		6	2	1	1	1	3	4	2	1	0	2	1	1	1	0	0	0
Total All		373	151	135	98	81	69	55	44	39	30	26	12	9	8	7	4	4

Appendix C

Issue Statement/Changed Condition

The Revised Forest Plan references landscape architect consultation and concurrence; Region 8 no longer employs landscape architects at the forest level.

Background

The Revised Forest Plan references landscape architect consultation or concurrence in the following instances:

Part 1 – Vision; Desired Condition; Public Use and Enjoyment; Landscape Management (p.23)

> *Monitoring and Evaluation:* During implementation monitoring reviews, determine if the project under review adequately considered SIOs. Report annually the number and type of management projects conducted in areas having a high SIO. Report whether a **landscape architect was consulted** in each case where project implementation was likely to affect scenic integrity, and if applicable, to what degree SIOs were maintained/achieved.

Part 3 – Design Criteria; Forest-Wide Design Criteria; Vegetation Management; General (p.79)

> VM003 Whenever proposed projects may affect a recreation trail, **consult with the Forest landscape architect** (or his/her designated representative) to determine how best to minimize impacts on the trail, minimize future vegetation encroachment on the trail and meet the assigned Scenic Integrity Objective. Retain sufficient overstory vegetation above and immediately adjacent to the trail to reduce encroachment of blackberry vines and other vegetation that impede non-motorized travel.

Part 3 – Design Criteria; Management Area Design Criteria; Management Area 9. Water and Riparian Communities; Table 3.10 Management Activities Permitted or Prohibited within Streamside Management Areas (SMAs) (p.104)

> Felling of individual trees and brush removal to enhance visual quality within administrative sites, developed recreation areas and recreational lakes – subject to **landscape architect**, hydrologist, and fisheries biologist **concurrence**.

Management Recommendations

1. Administrative change to adjust Revised Forest Plan language to reflect changed condition.
2. In lieu of landscape architect consultation, develop a protocol to determine analysis steps and technical requirements based on SIOs and visually sensitive MAs.
3. Develop a GIS tool to identify "seen areas" for project-level planning.
4. Continue to reference the *Scenery Treatment Guide – Southern Regional National Forests* (April 2008) for project-level mitigation/technical requirements/design criteria to meet Revised Forest Plan direction pertaining to SIOs.

IDT Work Group

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Recommended Administrative Change

Part 1 – Vision; Desired Condition; Public Use and Enjoyment; Landscape Management (p.23)

Monitoring and Evaluation: During implementation monitoring reviews, determine if the project under review adequately considered SIOs. Report annually the number and type of management projects conducted in areas having a high SIO. Report ~~whether a landscape architect was consulted~~ in each case where project implementation was likely to affect scenic integrity, ~~and if applicable,~~ to what degree SIOs were maintained/achieved.

Part 3 – Design Criteria; Forest-Wide Design Criteria; Vegetation Management; General (p.79)

VM003 Whenever proposed projects may affect a recreation trail, ~~consult with the Forest landscape architect (or his/her designated representative)~~ use best available science to determine how best to minimize impacts on the trail, minimize future vegetation encroachment on the trail and meet the assigned Scenic Integrity Objective. Retain sufficient overstory vegetation above and immediately adjacent to the trail to reduce encroachment of blackberry vines and other vegetation that impede non-motorized travel.

Part 3 – Design Criteria; Management Area Design Criteria; Management Area 9. Water and Riparian Communities; Table 3.10 Management Activities Permitted or Prohibited within Streamside Management Areas (SMAs) (p.104)

~~Felling of individual trees and brush removal to enhance visual quality within administrative sites, developed recreation areas and recreational lakes – subject to landscape architect, hydrologist, and fisheries biologist concurrence.~~

2. **Protocol**
   Completion: *FY18*
   Lead: *Chris Ham*
3. **GIS Tool**
   Completion: *FY18*
   Lead: *GIS Shop*

Appendix D

Heritage Resources—Emerging Issues

With the release of Forest Service Manual (FSM) 2360—Heritage Program Management in July 2008, Washington office staff and regional heritage program managers began a critical review of performance program indicators and their relevance to the new manual direction. This review led to development of a new performance measure. The new measure, Heritage Program Managed to Standard (HPMtS) was implemented in FY2012.

The seven indicators in the HPMtS measure correspond to key elements in FSM 2360 and accurately gauge program responsibilities and accomplishments:

1) A heritage program plan is in place for the national forest that includes all the elements listed as 1-7 in FSM 2362.3—Heritage Program Planning.
2) Field survey of national forest system lands where cultural resources are most likely to occur is conducted in accordance with Section 110 of the National Historic Preservation Act, the Archaeological Resources Protection Act, and Executive Order 11593.
3) Legacy cultural resources (previously recorded cultural resources that are unevaluated) are evaluated for eligibility to the National Register of Historic Places.
4) Condition assessments on Priority Heritage Assets (including heritage collections) are current and include allocation to management categories to guide the asset's protection and use (FSM 2362.4—Historic Property Plans, FSM 2363.3—Allocation of Cultural Resources to Management Categories, FSM 2364.3—Long Term Protection, FSM 2366—Management of Heritage Collections).
5) Cultural resource stewardship activities are accomplished to protect and maintain Priority Heritage Assets (FSM 2364.36—Direct Protection Measures, FSM 2364.42—Conservation and Maintenance of Cultural Resources.
6) Opportunities for study and/or public use offered including scientific investigation, public dissemination of research results, adaptive reuse of historic properties, traditional use, interpretation, or other public outreach through Windows on the Past projects (FSM 2364.43—Study and Use of Historic Properties, FSM 2365.2—Windows on the Past).
7) Volunteer hours are contributed to activities that enhance cultural resource stewardship and conservation and expand the capacity, visibility, and delivery of the heritage program (FSM 2365.1 Criteria for Heritage Public Education and Outreach, FSM 2365.2—Windows on the Past).

Heritage performance-measure accomplishments are reported in NRM Heritage—the national system of record and upward reporting for all heritage data relating to cultural resources, compliance work, and artifact assemblage information. To meet agency reporting requirements, target allocations, and budget allocations, the heritage program must maintain an up-to-date data set with both transactional and spatial data. These data will determine that forest units have met their assigned annual HPMtS target. Since these are FS Manual requirements, the Forest Plan will not need to be amended to include these heritage standards and procedures.

Appendix E – Approved Communication Sites

Approved Communication Sites and sites for which plans are under development:

Bee Mountain Electronic Site Mena RD, Polk County, AR NW1/4 of SE1/4 Section 13, T3S R31W This site is unoccupied and may be abandoned.	**Buck Knob** Oden RD, Scott County AR T1S. R28W, Sec. 1
Cove Mountain Fourche RD. Perry, Co. AR T3N, R21W, Sec. 14	**Crystal Mountain** Winona RD, Saline County, AR T2N, R18W, Sec. 8 This site is unoccupied and may be abandoned.
Danville Electronic Site Fourche RD, Yell Co. AR T4N, R23W, Sec. 12	**Dutch Creek** Fourche RD, Yell County, AR, 2.3 Ac. T4N, R23W, Sec. 12 Microwave, mobile radio
Eagle Mountain Mena RD, Polk Co. AR SW1/4 Sec. 30 T3S, R29W	**High Peak** Caddo RD. Montgomery Co. AR T3S, R24W, Sec. 19
Kiamichi Mountain (Three Sticks Historical Monument) Kiamichi RD, LeFlore Co. OK T2N, R25E, Sec. 29	**Federal Aviation Agency, VORTAC Site** Choctaw RD, LeFlore Co. OK Sect. 6, T2N, R26E
Ouachita Pinnacle Jessieville RD, Garland Co. AR T1N, R21W, Sec. 15	**Paron Elec. Site** Winona RD, Saline Co, AR T2N, R18W, Sec. 11
Poteau Mtn. (Bates) Poteau RD. Sebastian Co. AR T4N, R32W, Sec. 34	**Rich Mtn. #1** Mena RD, Polk Co. AR NW1/4 Sec. 17, T1S, R31W
Rich Mtn. #2 Mena RD, Polk Co. AR NW1/4 Sec. 6, T2S, R30W	**Tall Peak** Mena RD, Polk Co. AR SE1/4 SE1/4, Sec. 24, T4S, R28W
White Oak Mtn. Cold Springs RD., Scott Co. AR T4N, R28W, Part of the NE NW, Sec. 26	**Sycamore** Choctaw RD, LeFlore Co. OK T3N, R23E, Sec. 33
Slatington Peak Caddo RD. Montgomery Co. AR NW1/4 NW1/4 Sec. 4, and NE1/4 NE1/4 Sec. 5, T4S, R27W Currently unoccupied, retain for future development.	**Hodgen** Choctaw RD, LeFlore Co. OK T3N, R25E, Sec. 2

Appendix F – Contributors to the FY 2016 M&E Report and 10-Year Review

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