Monitoring and Evaluation Report

for the

Land and Resource Management Plan

Arkansas and Oklahoma

Fiscal Years 2012 - 2013

October 1, 2011 - September 30, 2013

United States
Department of
Agriculture

Forest
Service

FY 2012-FY 2013 Monitoring and Evaluation Report

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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Forest Supervisor's Certification

This is the seventh M&E Report for the 2005 Revised Forest Plan (Forest Plan), which went into effect December 2005. I have evaluated and endorse the monitoring results and recommendations presented in this Monitoring and Evaluation Report (M&E Report).

Monitoring and evaluation are important tools in determining if management direction contained in the 2005 Forest Plan is effective in achieving the desired conditions for the Ouachita National Forest, if program priorities and objectives are being accomplished, and if the Plan standards (design criteria) adequately guide project implementation. This and future M&E Reports will contribute to review of and updates to the 2005 Forest Plan.

I have directed that the actions necessary to respond to the recommendations in this report be implemented. I have considered funding requirements necessary to implement these actions.

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NORMAN L. WAGONER Date
Forest Supervisor

Summary including Priorities, Recommendations, and Focus Areas

As monitoring results are analyzed, trends are identified; and as expected, some of those trends reveal resource management concerns. Additionally, some focus areas are identified due to new research or through monitoring and lack of definable trends. In the discussions below, 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 (M&E) Report.

Implementation Monitoring Reviews (IMR)

Two IMRs were conducted during this monitoring period (FY 2012 – FY 2013): Rocky Branch Watershed Project on the Mena/Oden RD on September 12, 2012; and the Buffalo Creek 1 and Buffalo Creek 2 Watershed Projects, and Panther Creek CE Project IMR (Buffalo Creek Project) on the Oklahoma RD on February 7, 2013. The Review Team found that planning and on-going implementation for the Rocky Branch watershed project on the Mena/Oden RD was commendable as the first dry oak woodland restoration effort for the Forest since the 2005 Forest Plan was signed, but more work is planned/needed to achieve appropriate results. For the combined Buffalo Creek 1 & 2/Panther Creek CE Project in Oklahoma, the Review Team concluded that the planning and on-going implementation was commendable as objectives of the activities were to restore the pine woodland condition towards renewal of the Shortleaf Pine-Bluestem Grass Ecosystem and Red-Cockaded Woodpecker Habitat, but that more work is planned/needed to achieve appropriate results.

Landownership and Land Administration

Boundaries were marked or landline maintenance performed on approximately 748 miles of National Forest System boundary during FY 2006 through FY 2013. To protect land ownership title, 11 encroachments were resolved during FY 2012 and 12 were resolved in FY 2013

Land Ownership Pattern and Land Exchanges

Overall, the total of National Forest System lands has remained fairly stable, increasing by 5,061 acres from FY 2005 – FY 2013. There is likely to be a stable trend in National Forest System acreage due to funding for other Forest priorities; however, if there is a need to exchange or purchase additional lands, the Forest will continue to apply the Landownership Strategy.

Transportation System and Access Management

Transportation System

During FY 2012 and FY 2013, 1,625 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, 38.6 miles of arterial/collector roads were reconstructed (11 roads), and 5.3 miles of new arterial/collector roads were constructed. Plus, 42.45 miles of local roads were reconstructed and 56.3 miles of roads removed from the system (decommissioned) during FY 2012 and FY 2013.

Bridge Inspections
There are 130 bridges on 73 roads within National Forest System management and approximately ½ of those bridges are inspected annually. For FY 2012, 76 bridges were inspected, and over 85 percent were found to be free of any structural deficiency. For FY 2013, 54 bridges were inspected, and over 88 percent were found to be free of any structural deficiency. Those requiring maintenance will be addressed as funding is available or closed if a deficiency becomes a safety hazard.

Access/Travel Management
During FY 2010, the Forest completed a travel management environmental analysis and NEPA decision that provided data for the Motor Vehicle Use Maps. Five Motor Vehicle Use Maps (MVUMs), one for each set of combined Ranger Districts, were prepared displaying the routes and, in some cases, seasons designated for motor vehicle use. These maps are updated annually to reflect changes.

MA – 8 Administrative Sites
Facility Operation and Maintenance
Little progress has been made in reducing or eliminating leased facilities due to budget constraints. Likewise, due to budget constraints the Forest has no known date for anticipated design or construction of the office needed for Waldron, although the land has been purchased. Some progress has been made to reduce the footprint of the five Ranger Districts, but there is a need to consolidate administrative facilities remnant from the administration of the twelve separate Ranger Districts. To address energy efficiency, the Forest upgraded three heating, ventilating, and air conditioning systems in offices during FY 2012 and FY 2013 to increase efficiency and installed insulation in one office as well. The Forest contracted to inventory all HVAC systems and their condition in 2013 and conducted an energy audit at SO South.

Special Uses
Uses of National Forest System lands are authorized by Special Use permits, easements and leases. A relatively consistent number of authorizations were issued between years 2012 and 2013: 538 during FY 2012 and 529 in 2013. Road access requests comprise the bulk of the special use requests. Communication and utility corridor uses comprise the next highest categories of use requests.

Commodity and Commercial Uses
Minerals and Energy Development
As reported since FY 2006, potential threats from geologic hazards to human life or natural resources remain low on the Ouachita NF in both Arkansas and Oklahoma. Gas leases totaled 212 and 215 in FY 2012 and FY 2013 respectively. Minerals cases were similarly consistent with 20 cases each in both FY 2012 and FY 2013.

Livestock Grazing/Range Activities
The Range program had been on a decline for several years but has been relatively stable for the past four years. Number of livestock remained steady at 116 and as did the number of active allotments at 3. Number of permittees were equal for FY 2012 and FY 2013 at 4.

Timber Sale Program

Firewood

Demand for firewood remains high but decreased in FY 2012 and FY 2013 when compared to previous years. During FY 2012 permits for 744 cords of firewood were sold and during FY 2013, permits for 608 cords of firewood were sold.

Timber – Allowable Sale Quantity (ASQ)

The ASQ for the Ouachita NF is 27 million cubic feet per year (270,000 CCF). Volume sold that was chargeable towards to the ASQ was 178,351 CCF in FY 2012 and 151,358 CCF in FY 2013.

Timber Volume Offered and Sold

Since FY 2006, the Ouachita NF has sold an average of almost 94 percent of the Forest Plan objective of 200,000 CCF per year. In FY 2012, 178,426 CCF was sold and in FY 2013, 153,743 CCF was sold.

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 affects. Additionally, monitoring of acidic deposition levels occurs nearby and is representative of conditions on the Forest.

Particulate Matter: Particulate matter is a mixture of extremely small particles made up of soil, dust, organic chemicals, metals, and sulfate and nitrate acids. Annual monitoring showed that at the three monitoring sites (Polk County, Garland County, and Caney Creek) all concentrations levels were 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 two monitoring sites closest to the Forest (Polk County, AR and Sequoyah County, OK), most monitored readings were below the National Ambient Air Quality Standard set by EPA.

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 CASTNET database. From 2004 through 2010, nitrogen and sulfur deposition rates indicate a steady decrease in acidic deposition; however, in 2011 both nitrogen and sulfur rates increased sharply. Then, in 2012, both deposition rates decreased over 30%.

Terrestrial Community Types

Terrestrial communities include all non-aquatic Ouachita Mountain and West Gulf Coastal Plain Ecological Community Systems listed by NatureServe (2003). There are ten terrestrial ecosystems (and three subsystems).

MA 6 – Rare Upland Communities

At the 2010 Five-year review, it was noted that three of the seven communtity types had condition scores that improved and four had scores that had declined slightly. Most of these are highly fire dependent and depend on growing season fires for best results. Annual monitoring is

not generally sufficient to develop discernable trends; therefore, most monitoring of these communities is reported at 5-year intervals.

MA 14 – Ouachita Mountains and MA 15 – West Gulf Coastal Plain (Habitat Diversity Emphasis)

Management Area (MA) 14, Ouachita Mountains-Habitat Diversity Emphasis and MA 15, West Gulf Coastal Plain-Habitat Diversity Emphasis comprise over 42 percent of the Ouachita NF and were established within the Forest Plan for varied intensities of vegetation management. Throughout all the communities, there is a persistent need to create additional early seral vertical structure for wildlife habitat and forest health purposes.

MA 21 – Old Growth Restoration (Pine-Grass Emphasis)

Restoration of pine-grass old growth forests and woodlands fills a missing component (an ecological gap) among existing communities of the Ouachita Mountains, created largely by decades of fire suppression and large-scale logging. Frequent fire is essential to maintain habitat in this community type.

MA 22 – Renewal of the Shortleaf Pine/Blue Stem Grass Ecosystem and RCW Habitat

The Ouachita Shortleaf Pine- Bluestem Woodland is a component of Ouachita Shortleaf Pine-Oak Forest and Woodland, also a part of the pine-dominated upland communities. The 5-year trend in this community type is improvement as shown by the condition score changing from Fair to Good. This community provides valuable habitat for the federally endangered Red-cockaded Woodpecker and is subject to intensive management, especially thinning treatments with frequent prescribed fire.

Collaborative Forest Landscape Restoration Program (CFLRP)

The purpose of the CFLRP is to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes. This project was funded in FY 2012 and FY 2013, and will continue to be funded through FY 2019. The Shortleaf Pine Bluestem Grass Community project on the Ouachita NF will provide accelerated landscape restoration for the shortleaf pine – bluestem grass community within the boundaries of MA 21, 22, and the American Burying Beetle Areas (ABBAs) Restoration is being accomplished primarily through increased accomplishments in prescribed burning, commercial timber harvests/thinnings, wildlife stand improvement (WSI), timber stand improvement (TSI), etc. in collaboration with over 25 partners. The Ouachita NF is the only participant in the National CFLR program that is incorporating conservation education into the CFLRP efforts. At least 12 schools have received conservation education programs as a result of the CFLRP.

Terrestrial Habitat and Health

Soils

Soil Restoration and Maintenance Activities are implemented on small projects as a part of watershed improvement on the Ouachita NF. These include such activities as rehabilitating abandoned roads, trails and mines, gully stabilization, and stream channel and riparian restoration. Over 1,500 acres of soil restoration was accomplished in FY 2012 and FY 2013 combined.

Burned Area Emergency Response (BAER) is a part of soil and water resource assessment, rehabilitation and monitoring work on the Ouachita National Forest. BAER focuses on natural resource damage occurring as a result of wildfire. Soil and water resource assessments were conducted on 685 acres in FY 2012 and on 1,177 acres during FY 2013.

National Best Management Practices for Water Quality Management is a required part of resource monitoring programs on National Forest lands, beginning in FY 2013 (687 acres accomplished). This was the first of two transitional years which mandated that BMPs within the two categories of roads and fire be monitored on each National Forest. Several years of monitoring will be required before effectiveness can be evaluated.

Fire Influences and Fuels

Fire management activities across the Forest are relatively stable, with a general trend of less than 100 wildland fires occurring annually. The fuels treatment program has resulted in gains toward restoration of ecosystems, reduction in risk of unwanted wildfires, and wildlife habitat improvement. 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 proven difficult to achieve. For FY 2012, 101,529 acres were credited to the prescribed fire program; however, this number fell slightly in FY 2013 to 95,165 acres, both well below the Forest objective.

Under Watershed Restoration and Enhancement Agreement Authority, popularly known as the Wyden Amendment, the Forest Service is permanently authorized to enter into domestic cooperative agreements or grants with willing participants for the protection, restoration, and enhancement of fish and wildlife habitat and other resources on public or private land and for the reduction of risk from natural disaster where public safety is threatened that benefit these resources within the watershed. Under this authority 2,480 acres were cooperatively treated with fire in FY 2013. No agreements were executed in FY 2012.

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 Dry Creek, Poteau Mountain, Blackfork, and Flatside wilderness areas, completing 35,466 acres of wilderness inventory on four of the six wildernesses. No additional accomplishments were reported for the FY 2012 or the FY 2013 time period.

The Forest treats for non-native invasive species and also surveys areas to locate sites that need treatment. In 2012 and 2013 there were 374 and 400 acres, respectively, of NNIS treated (total of 774 acres) and a total of 27,742 acres inventoried due to new infestations with 26,349 of those acres accomplished in FY 2012. Acres inventoried are determinate on locating new infestations.

Insects and Disease

The Ouachita NF continues to participate in annual southern pine beetle (SPB) trapping that attracts and forecasts SPB activity and participates in 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 Ouachita NF is also currently dealing with the invasive “emerald ash borer”. Six counties in south central Arkansas have had positive trap catches and those counties plus other buffer counties have now been quarantined for the

movement of hardwood timber products. This particularly affects the Ouachita NF in that firewood permitees 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 to adjacent counties. The Ouachita NF has been active in notifying the public of the destructive and invasive nature of this pest for the past four years. The red bay wilt which is vectored by a bark beetle has been found within eight miles of the Arkansas state line. At risk are red bay trees and sassafras trees within the forest. Oak decline is still being found in Arkansas. This problem occurs on poor sites with high volume and age component present. There are isolated areas within the Ouachita NF that host this disease complex. These areas will be aggressively treated as they are found and the disease component confirmed.

Vegetation Management

Forest Regeneration

The Ouachita NF predominately 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 between 2006 -2013 resulted in 18,257 acres of regeneration. Additionally, uneven age harvests occurred on 11,210 acres, regenerating approximately one-seventh of those acres (1,601 acres). Silvicultural treatments involving commercial timber sales are less than half of what was proposed and listed as probable in the Forest Plan. Under current workloads, sale preparation requirements and the Forest’s reduced workforce, it is unlikely that this trend will change. Available stumpage for KV funds drop sharply when specified road construction or reconstruction is required. The Forest is experiencing a downward trend in KV dollars available for wildlife, fisheries, invasive species, and erosion control projects.

Terrestrial Habitats and Conditions

Vertical Structure

Fire, thinning, and other vegetation management practices help sustain the balance of structural and compositional diversity needed to support healthy populations of native plants and animals while maintaining the productivity of the land.

Early Seral Stage

Early seral stage vegetation is important for the viability of early seral-dependent species as well as to sustaining a healthy and resilient forest. The early seral stage is particularly important to species such as white-tailed deer, Northern Bobwhite, Prairie Warbler, many other bird and small mammal (rodents) species, and reptiles such as terrapins and snakes seeking small mammals as food sources. The Forest is lagging behind the Forest Plan Objective to 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. Creation of early seral habitat averages in the 3,000 acre range annually. In FY 2012 and 2013, 110 and 391 acres, respectively, were salvaged; however, adding this to the acres of early seral created through green timber harvesting (2,605 and 925) still does not meet the plan objective.

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.

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 FY 2005 to FY 2013 the Forest increased in the late seral stage by nearly 150,000 acres.

Other Terrestrial Habitat Components – Wildlife

Terrestrial habitat systems provide habitat that is important specifically for wildlife.

Cave and Mine Habitat

In Bear Den Cave, during the 2012 bat survey, at least 5 Indiana bats were identified. There were no bat surveys conducted at Bear Den Cave in FY 2013. Previous surveys at Bear Den Cave found 25 Indiana bats in 2010. No other proposed, endangered, threatened, or sensitive bat species where found in any of the 2012 or 2013 cave and mine surveys on the Ouachita NF. In May 2013, the Southern Region enacted a regional closure order for caves and mines across the south, extending the protection against the spread of white-nose syndrome.

Mast Production

Hard mast (acorns and hickory nuts) is an important habitat element 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 423,961 acres of hardwoods greater than 50 years old in FY 2012 and 2013, and the number of these acres have declined slightly, but not significantly since 2005. Hardwoods greater than 100 years old are used as a surrogate for mature hardwood forests. In FY 2012 and 2013, there were 70,343 acres of hardwood forest greater than 100 years old. When compared to FY 2005 acres of mature hardwood forest and mature pine forest, the Ouachita NF is slowly becoming an older forest.

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. Forest-wide habitat capability modeling shows that terrestrial MIS species are moving toward or have passed the projected desired habitat capability for FY 2015, with a few exceptions. Habitat for such early successional species as Northern Bobwhite declined in 2012 and 2013, from the previous years. Habitat capability for Prairie Warbler has been declining since 2007, and although it has appeared to be stable with some increase the last 2 years, it continues to be well below the habitat capability estimated in the 2005 Plan. Habitat for such late successional species as Pileated Woodpecker remains above levels projected for 2015. Habitat capability for Scarlet Tanager has steadily declined to below the 2015 projected level, although it remains fairly stable for the last 4 years.

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.

Eastern Wild Turkey

A negative trend is suggested for the turkey population on the Forest based on habitat capability modeling. In addition, the drop in turkey harvest and birds detected on the Landbird Points data would indicate a reduction in the number of turkey forest-wide. Still, habitat capability remains above the level projected in the 2005 Forest Plan. The sustained high levels of habitat capability would indicate that the drop in harvest levels, reductions in poults per hen, and birds detected on the Landbird Points are due to factors other than habitat.

Northern Bobwhite

Estimated habitat capability for the Northern Bobwhite has shown a slight increase since FY 2006, with the last 3 years showing a decrease. There is an overall level capability over the last 8 years. However, it is still far from reaching the projected FY 2015 desired forest-wide habitat capability of 101,748 acres based on the 2005 Forest EIS. One major factor is that early seral habitat creation has never attained the 2005 Forest Plan objective of 5,500 acres per year. The Northern Bobwhite population viability on the Ouachita NF is not expected to be threatened, and populations are expected to improve with continued increases in thinning and prescribed fire, especially associated with some 200,000 acres of shortleaf pine-bluestem grass ecosystem restoration.

Pileated Woodpecker

The CompPATS wildlife model estimates for the habitat capability, using all forest types, indicate a more defined decreasing trend since FY 2006 than Landbird Points data. These CompPATS wildlife model data are for pine, pine-hardwood, hardwood, and hardwood-pine stands with the greatest value for stands greater than or equal to 41 years old. As these stands age, the habitat capability to support the Pileated Woodpecker should begin to stabilize. 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 upward trend since FY 2006; however, the long term trend remains downward. Habitat capability for the Prairie Warbler on the Ouachita NF continues to show a downward trend, which is consistent with range-wide trends. Although declining, the 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 through seedtree and shelterwood timber harvests, has not been realized. Meanwhile, increases in thinning and prescribed fire in the pine and pine-hardwood types, especially that associated with approximately 200,000 acres of shortleaf-bluestem ecosystem restoration, will benefit Prairie Warbler populations.

Red-cockaded Woodpecker

Red-cockaded Woodpecker is an MIS but is discussed in the Threatened and Endangered Section.

Scarlet Tanager
This species was selected as an MIS to help indicate the effects of management on mature forest communities. Landbird Points data collected from FY 2006-2013 indicate an overall stable to increasing trend for the Scarlet Tanager; however, Ouachita NF habitat capability data suggest a downward trend for the Scarlet Tanager. 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 despite conflicting data, the continued long-term viability of this species is not in question.

White-tailed deer
The white-tailed deer is an MIS that was selected to help indicate the effects of management on meeting the public hunting demand. The estimated habitat capability for deer for fiscal years 2006-2013 shows a downward trend, but is within the range of the desired habitat capability of 38,105 acres for FY 2015. The downward trend is partially explained by the fact that 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. Deer are widespread, abundant, and the habitat capability still remains above the Forest Plan projection. There are no indications of a need for adjustment in current management practices.

R8 Sensitive Species and Terrestrial Species of Viability Concern
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 listed on the Regional Forester’s Sensitive Species list are regularly monitored: the Bald Eagle, the Caddo Mountain salamander, the Rich Mountain slit-mouth snail, and certain sensitive bats.

Bald Eagle
Bald Eagles were removed from the endangered species list in June 2007 due to species population recovery. Surveys in 2012 and 2013 on the Ouachita NF showed four known nest sites (Irons Fork Lake, Lake Ouachita and North Fork Lake), with one confirmed nest success at theNorth Fork Lake site. Other laws are in place to protect this species, and the species is expected to remain stable.

Caddo Mountain Salamander
No recent surveys for the Caddo Mountain Salamander have been conducted.

Rich Mountain Slit-mouth Snail
No Rich Mountain slit-mouth snails were found during the 30-50 minute searches of five sites in FY 2012, or during the 30-40 minute searches of eight sites in FY 2013.

Eastern Small-footed Bat and Southeastern Myotis
The Ouachita NF initiated a bat acoustic survey protocol in FY 2009 to monitor bat population trends and assess the impacts of White Nose Syndrome (WNS) on the summer distribution of bats. There were no FY 2012 or FY 2013 results reported for this M&E report.

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 Ouachita NF and 6 are known to be terrestrial species. Terrestrial listed are three birds, one mammal, one insect, and one reptile species. Habitat scores indicate that the American burying beetle and Indiana Bat are stable and that the habitat scores for Red-cockaded Woodpecker indicate improvement. Each of these species are summarized below and discussed in further detail within the report.

American Burying Beetle

In FY 2012 and 2013, a total of 36 transects were monitored each year using the current USFWS (2010) protocol. In 2012, one ABB female was captured in LeFlore County, OK, surveys and a male was captured in Scott County, AR, both on permanent survey routes. In 2013, 2 females were captured in LeFlore County, OK, both on permanent survey routes within the American Burying Beetle Areas (ABBAs).

Indiana Bat

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), but not south into the Ouachita Mountains. Surveys in 2012 found at least 5 Indiana bats hibernating in Bear Den Cave in Oklahoma. No surveys were conducted at Bear Den Cave in 2013. Bear Den Cave represents the only natural cave habitat known on the Forest. Very little active management occurs near the caves other than protection of the cave itself by gating.

Bats and White-Nosed Syndrome (WNS)

The USDA Forest Service has completed monitoring surveys on the Ouachita NF for WNS in 2012 and 2013 and none of the monitored caves or mines on the Ouachita show evidence of WNS. White-nose syndrome is responsible for the mortality of more than one million bats in the northeastern United States since it was first identified in 2006. If WNS becomes more prevalent, additional steps may be required to protect bat populations on the Ouachita NF in Arkansas and Oklahoma.

Least Tern and Piping Plover

The USFWS listed Endangered species, the Interior Least Tern and Piping Plover, are only known to occur at the Red Slough WMA on the Ouachita NF. While the Interior Least Terns are regular from late Spring to early Fall, the Piping Plover is very rare at Red Slough. During FY 2012, the fewest number of Least Terns using Red Slough within the 15 years the Forest Service has been actively managing it were reported, and there were no Piping Plover observed for Red Slough for FY 2012 or FY 2013. Lower numbers are attributable to drought conditions during FY 2011 – FY 2013.

Northern Long-eared Bat

The Northern Long-eared Bat (NLEB) was formally proposed for federal listing on the second day of Fiscal Year 2014, and will be reported in the M & E that covers FY 2014 report.

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 have increased from a low of 11 territories in FY 1996 to 67 active territories in FY 2013. Over the period that RCWs have been monitored on the Forest, the number of active territories and number of adult birds have increased. Nesting attempts have also steadily increased over the past 8 years. The number of nesting attempts has increased an average of 12 percent for each of the last 8 years. During FY 2013, a successful translocation to the Oklahoma RD, 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 management intensity should be maintained and intensive monitoring continued.

American Alligator

Surveys of the American alligator on the Oklahoma Ranger District in 2012 and 2013 located 18 and 32 alligators, respectively, in Red Slough and Ward Lake, with the 32 alligators counted in FY 2013 for a record high. The FY 2013 increase is attributed to successful hatchings at Red Slough and Ward Lake.

Missouri Bladderpod

Missouri Bladder Pod was monitored in FY 2013. The population at the Avant Site near the Cedar Fourche Recreation Area was in full bloom. This population was on the east side of the cedar Fourche road just outside of the recreation area. The population is small as earlier reported and each individual had multiple flowers.

Other Habitat Considerations - Wildlife

In addition 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.

Hunting

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.

Wildlife Management Areas

On the Ouachita NF in Arkansas, there are three Wildlife Management Areas, each established by Memorandum of Understanding between the land managing parties in 1968: Caney Creek, Muddy Creek and Winona WMAs. These WMAs are managed by the Arkansas Game and Fish Commission (AGFC) cooperatively with the Ouachita NF for the benefit of the hunting public.

Caney Creek WMA (85,000 acres) occupies portions of Howard, Montgomery, Pike, and Polk Counties. Food plot maintenance in the Caney Creek WMA is on a two-year rotation, so AGFC maintained 72 food plot acres during FY 2012, and 68 food plot acres during FY 2013.

Muddy Creek WMA (150,000 acres) is located in Montgomery, Scott, and Yell Counties. Food plot maintenance in the Muddy Creek WMA is on a two-year rotation, so AGFC maintained 160 food plot acres during FY 2012, and 160 food plot acres during FY 2013.

The Winona WMA (160,000 acres) is located on lands in Garland, Perry, and Saline Counties. Food plot maintenance in the Winona Creek WMA is on a two-year rotation, so AGFC maintained 160 food plot acres during FY 2012, and 160 food plot acres during FY 2013.

In Oklahoma, there are four Wildlife Management Areas on the Ouachita NF managed in cooperation with the Oklahoma Department of Wildlife Conservation (ODWC). Oklahoma is unique for the Ouachita NF in that all National Forest System lands within the two counties in Oklahama are contained within WMAs. All of the National Forest System lands within LeFlore County are contained within either the Ouachita LeFlore Unit WMA (212,836 acres) or the Cucumber Creek WMA (12,627 acres with 3,514 owned by The Nature Conservancy). 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).

In the Ouachita WMA in cooperation with the ODWC and National Wild Turkey Federation (NWTF), 130 food plots are maintained. For 2012 and 2013, 45-50 acres of food plots per year were maintained. The NWTF contributes to the prescribed burning, which is on a three-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 Oklahoma Department of Wildlife Conservation (ODWC). The Red Slough WMA bird surveys through FY 2013 reveal a total of 317 bird species.

Walk-In Turkey Areas

There are nine Walk-In Turkey Areas on the Ouachita NF, seven in Arkansas and two 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 Ouachita NF in a place free of disturbance from motor vehicles. The Ouachita Mountains, with high turkey populations compared to other areas, have seen the number of hunters increase dramatically during the last 20 years, making it challenging for serious turkey hunters to find an area to hunt away from traffic and noise. Through an FY 2013 NWTF grant, the AGFC were able to: bushhog 18 acres of food plots; plant 9.5 acres within the Sharptop Walk-In Turkey Area in AR; reclaim 7.5 acres of food plots; and improve access for continued maintenance (dozer contract). In OK, five 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 in cooperation with the ODWC.

Riparian and Aquatic Ecosystems and Habitat

Riparian and aquatic associated ecosystems comprise approximately 16 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.

Game Fish Habitat

Aquatic Management Indicator Species (MIS)
Aquatic species are divided into Pond, Lake and Waterhole MIS and Stream and River MIS.

Ponds, Lakes, and Waterhole MIS
There are three pond, lake, and waterhole management indicator species (MIS) and these species are reported on a calendar year basis rather than a fiscal year basis as are most other species discussed in this M & E Report: Bluegill, Largemouth Bass, and Redear Sunfish. White Crappie, Gizzard Shad, and Threadfin Shad are not designated MIS species, but they are discussed because they are helpful to determine catch and harvestability rates of other game fish or to assess potential hazards to sustainable sport fisheries.

Bluegill
Although there were some fluctuations between years, samples in 2012 and 2013 indicate that 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 2012 and 2013, Largemouth Bass populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question. During seining, adequate reproduction was found in most of the waters that were easily seined. No management changes are indicated from monitoring results.

Redear Sunfish
As sampled in 2012 and 2013, the Redear Sunfish populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question. During seining, adequate reproduction was found for Redear Sunfish in most of the waters that were easily seined. No management changes are indicated from monitoring results.

White Crappie
The 2012 and 2013 samples are of such low numbers of White Crappies caught that any conclusion may be of little value. However, the catch rates for 2012 and 2013 are similar to that of 2001, 2004, 2007 and 2008, with the harvestability fairly similar for those years also. The pattern of low catch rates and high harvestability seems to be holding.

Gizzard Shad
The electrofished Gizzard Shad are generally too large to be consumed by all but the very largest Bass and Channel Catfish in Cedar Lake. Based on these results, it appears the large Shad should continue to be targeted with a reduction program to promote production of the smaller Gizzard Shad with the work started with the Oklahoma Department of Wildlife Conservation continuing as long as results seem worth the effort. 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.

Threadfin Shad
With no Threadfin Shad showing up in two gill nets and three electrofishing samples in 2009, none with the same effort in 2010 and none seining and during multiple electrofishing samples in 2011, 2012 and 2013; it appears the threadfin Shad have likely died out. Monitoring protocols will be changed so that additional gill net sampling will not be conducted unless Threadfin Shad should appear in electrofishing or seining samples again.

Stream and River MIS

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

Johnny Darter

Johnny Darter counts were generally quite low in 2012 with some improvement in 2013. Both years were extremely dry, especially 2012 during the time of the snorkel surveys. Both years had numerous high water events during the winter through the spring. Three sites in 2012 were lower than the 10-90% variance limits for those sites. The 2013 Johnny Darter counts for all sites are each within their 10-90% variance limits.

Channel Darter

All 2012 counts for Channel Darters were higher than those at their respective sites in 2013, other than the 2013 counts in the Mountain Fork at both the OK Highway 4 Bridge and the Arkansas Highway 246 Bridge which did not exceed previous year's counts.

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

The 12 fish species identified above are classed as MIS for the Gulf Coastal Plain Ecoregion Streams. Data for these species is gathered every five years as a part of the Basin Area Stream Survey (BASS). The FY 2011 BASS data review has been accomplished. However due to the recent retirement of the Forest Hydrologist, analysis of the BASS data for stream/river MIS data will occur in FY 2015. No reports on status of these species have been received since completion of the 2011 BASS.

R8 Sensitive and Other Aquatic Species of Viability Concern

Ouachita Darter

No Forest Service Ouachita Darter snorkel surveys were conducted in 2012 or 2013 due to scheduling issues and flows being too low to float a canoe through the stretch previously monitored. Based on the Arkansas Tech University students' surveys and previous Forest surveys, the Ouachita Darter population in this section of the river appears viable but may be declining. Continued monitoring will better assess the variability in its numbers in this section of the river and the monitoring efforts may be fine-tuned utilizing the latest results from the Arkansas Tech University study.

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 FY 2012 or 2013. There are two mussels listed as federally threatened: Arkansas Fatmucket and Rabbitsfoot. There are four mussels listed as federally endangered: Winged Mapleleaf, Scaleshell, Ouachita Rock-pocketbook, and Spectaclecase.

Leopard Darter

The snorkel survey counts for Leopard Darters in 2012 and 2013 were somewhat higher than those in the summer of 2011. 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 its listing classification. It was recommended that the Recovery Plan be updated. There is a new perceived threat to its survival of inadequate genetic variation between and within populations.

Harperella

In 2012 two new locations for harperella were discovered on the Ouachita NF in Arkansas and in Oklahoma. The Fiddler Creek site was intensively monitored due to a road construction project. Known sites continued to have populations similar to past years. A portion of the Irons Fork population was monitored, and populations appeared to be similar in numbers and areas previously occupied.

In 2013 Fiddler Creek sites were monitored and the population is considered stable. The Irons Fork population appeared to be down from previous years. There was one site that is adjacent to NF lands that was reported in previous years as having thousands of plants and in 2013 less than 20 plants were located during the survey. This could, however, be due to the previous year's drought conditions rather than management actions.

Other Aquatic Habitat Considerations

Game Fish Habitat

Habitat for game fish and recreational opportunities for fishing are being protected, enhanced or maintained by: monitoring of bass and sunfish spawn with supplemental stocking requested from the state as needed; structural habitat improvements (fish attractors/cover); fertilizing and liming to increase productivity and reduce excessive aquatic vegetation; access improvements; and annual to biannual electrofishing to monitor the adult fish populations of Ouachita NF select lakes and ponds. For FY 2012 and FY 2013, annual channel catfish stocking continued in most managed recreational fishing waters in close coordination with the fish and game agencies of each state. In 2012 and 2013, 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 with shifting some of the Gizzard Shad biomass to smaller sized shad more available for game fish consumption.

Aquatic Habitat Enhancement Activities

Five miles of improved fish passage at three crossings and 61.5 miles of stabilized stream habitat resulted from FY 2012 work. Much of the sediment control came from heavy maintenance on OHV trails and replacement of a number of culverts and road maintenance after a prior flooding event. In FY 2013, three miles of fish passage were restored at three crossings and 40 miles of sediment reduction/control was accomplished, mostly funded with Federal Highway's flood restoration dollars.

Amphibian Habitat

No reports on amphibian habitat were available for the FY 2012 – FY 2013 reporting cycle.

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.

Herbicide Monitoring

Three streams were monitored for the presence of herbicides (Imazapyr and Triclopyr) below treated stands. This is an ongoing monitoring program where 10 percent of areas treated with herbicides are monitored for off-site movement. Three sites were monitored on the Mena-Oden District. Lab results indicated that the presence of herbicides were insignificant for all sites. No changes to the monitoring protocols are recommended; however samples need to be submitted to the lab for analysis and reported each year. Overall, the Forest's process for herbicide monitoring needs improvement.

Recreation and Scenery Management

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.

MA 1 - Wilderness (National Wilderness Preservation System)

There are six wilderness areas totaling approximately 64,469 acres located within the Ouachita NF, one with land in both Arkansas and Oklahoma (Black Fork Mountain Wilderness), four in Arkansas (Caney Creek, Poteau Mountain, Dry Creek, and Flatside), and one in Oklahoma (Upper Kiamichi). The six wilderness areas were congressionally designated in three separate acts. Despite lack of progress on Wilderness Management Plans, surveys of the wilderness areas reveal that they are in reasonable condition due, primarily, to the general lack of recreation over-use.

MA 20 - Wild and Scenic Rivers

Currently, the Cossatot and Little Missouri Rivers are the only designated Wild and Scenic Rivers within the Ouachita NF. A review of other eligible rivers during the 2005 Forest Plan revision studies revealed none suited for recommendation by the Forest Service as a National Wild and Scenic River, because these rivers are bordered by too little National Forest System land. No action was taken during FY 2012 and FY 2013 to have the Glover River formally designated as a part of the Wild and Scenic River system.

MA 17 - Semi-Primitive Areas

No management changes are recommended for Management Area 17.

Scenery Management

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 focus areas for Forest management to consider Scenery Integrity Objectives.

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 MA there are approximately 27,313 total acres.

MA 16, Lands Surrounding Lake Ouachita and Broken Bow Lake

Management Area 16, containing approximately 87,153 acres, includes National Forest System lands surrounding Lake Ouachita in Arkansas and Broken Bow Lake in Oklahoma. All management activities within this area are designed to address wildlife and recreation objectives and the protection of resource values for each lake. Scenic integrity is to be maintained so that visitors on the lakes or shorelines view the surrounding lands as predominantly naturally- appearing with little or no addition of road miles to the transportations system. Of 38 scenic overlooks on the Forest, all were maintained. During FY 2012 and FY 2013 the Hickory Nut Vista that provides views over Lake Ouachita was reworked, removing safety hazards and reconstructing the viewing platform. Also stabilization work was accomplished at the Jack Creek Overlook. Although growing vegetation that interferes with viewing continues to pose challenges at some vistas, no management changes related to scenery management are recommended.

MA 19 – Winding Stair Mountain Recreation National Area

Management Area 19, Winding Stair Mountain Recreation National Area and Associated Non-Wilderness Designations, consisting of approximately 79,897 acres, contains lands designated by the Winding Stair Mountain National Recreation and Wilderness Area Act of 1988, Public Law 100–499, except for the two 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 Management Area.

MA 3 – Developed Recreation Areas

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. During FY 2012 – FY 2013, Camp Clearfork organizational site was fitted with new hardened trail surfaces throughout the recreation area to improve accessibility from overnight facilities to other recreation facilities at the site.

Fee Sites

Occupancy rates are not tracked at non-fee sites. Of the recreation sites that are operated as fee sites, occupancy rates are not relevant for the five day use areas (at Cedar Lake, Lake Sylvia, Shady Lake, Little Pines, and Charlton Recreation Areas). Although tracked in the past, fee collection data were not available for the FY 2012 - FY 2013 Monitoring and Evaluation Report.

Trails

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 trails system in Oklahoma, the International Mountain Bicycling Association "epic" Womble Mountain Biking Trail, and the Lake Ouachita Vista Trail.

Recreation Participation

Based on the 2010 National Visitor Use Monitoring program, overall satisfaction ratings were very high – over 80 percent of visitors to the Ouachita NF were very satisfied with their overall experience. The next National Visitors Use Monitoring will take place during FY 2015.

Public and Agency Safety

The Forest Law Enforcement Officers (LEO's) responded to or assisted with 51 and 20 accidents during FY 2012 and 2013, respectively, within or adjacent to the Ouachita NF. These numbers include minor injuries (sprains, dog bites, etc.), All-Terrain Vehicles (ATV), and motorcycle and motor vehicle accidents. Eleven fatalities were reported in FY 2012 as a result of homicide, suicide, and ATV accidents; four deaths were attributable to a plane crash on the Winona Ranger District. During FY 2012, an ATV Razor was acquired to address violations on ATV trails, and whether related, or not, there were zero ATV fatalities during 2013. FY 2013 was the first year that the Ouachita NF did not have to report an ATV fatality. LE&I investigated 11 assault cases in FY 2012 and 22 in FY 2013. In FY 2012, 130 separate DUI and public intoxication incidents were documented. For FY 2013, 309 separate DUI and public intoxication incidents were documented, a 237% increase from FY 2012. For FY 2012, 91 separate ATV violations were recorded with 99 recorded for FY 2013. A total of 207 arrests were reported (88 in FY 2012 and 119 in FY 2013)

Heritage Resources

Heritage Stewardship

The Heritage Overview has been completed in draft form is expected to be available in final form by early CY 2015. All archeological collections curated by the Ouachita NF in the Supervisor's Office have been examined for faunal materials, and analysis revealed several small human bone fragments from six archeological sites in McCurtain County, Oklahoma. The Archaeological Resources Protection Act (ARPA) of 1979 requires more consistent monitoring, particularly in instances when damaged sites are found; and documentation must be forwarded to Tribes.

Tribal and Native American Interests

Working together with the Ozark-St. Francis National Forests, a revised Programmatic Agreement to guide the Section 106 (National Historic Preservation Act) work was prepared and is awaiting signature. The existing agreement has been extended through January 2015. The new agreement will streamline the Section 106 processes, clarify specific processes, and strengthen our commitment to working with the State Historic Preservation Officers and Tribes. It will be tiered to the Forest Service Heritage Handbook. The goal is to have this revised agreement signed by the time the existing agreement expires in January 2015.

Contribution to Social & Economic Sustainability

The Ouachita NF comprises approximately 4.2 percent of the land base of the state of Arkansas and less than 1 percent of the total land area in Oklahoma. In Arkansas, Ouachita NF System lands occupy a high of 67 percent to a low of 0.08 percent of total lands by county, while within the two Oklahoma counties, National Forest System lands occupy 22 percent of LeFlore County and 11 percent of McCurtain County. The Ouachita NF is important to many local economies in terms of providing employment, products, services, recreation visits, contracting, and other sources of revenue that then multiply economically within local communities, and this has remained fairly stable. Economic contributions should be evaluated in terms of area of the county occupied by the NFS lands.

Payments to Counties

An important source of revenue for some counties that have NFS lands is payments received under the Secure Rural Schools and Community Self-Determination Act (or, if a county chooses, the older 25 percent Payment Act) that provides counties with annual funding for: (1) county roads in or near national forests; (2) local school districts that include National Forest System lands; and (3) local conservation projects on or benefitting National Forest System lands. Payments in FY 2013 ranged from a high of $1,340,211 to Scott County (where nearly 65% of the county is in NFS ownership) to a low of $492 in Hot Spring County (where less than 1% of the County is in NFS ownership).

Budget

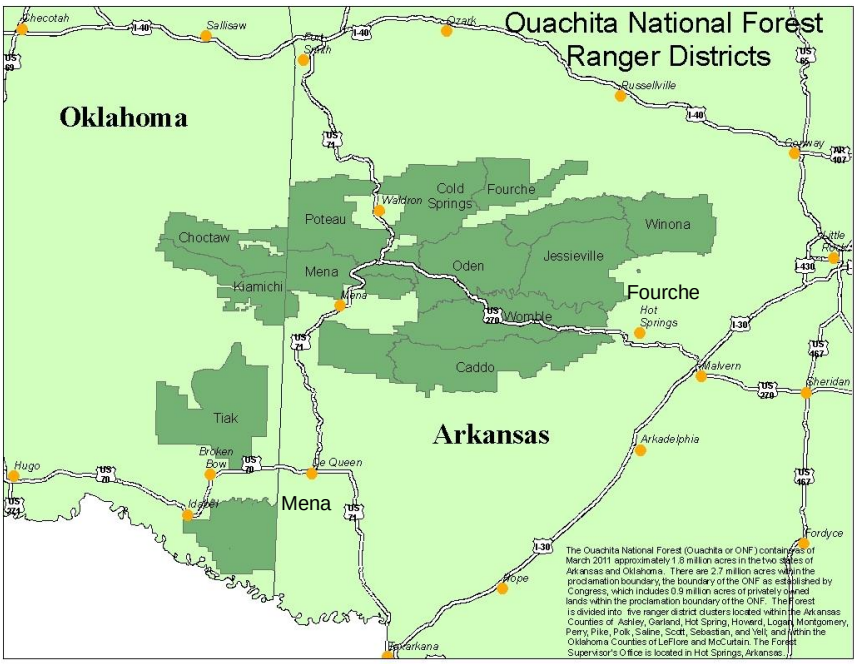
The Forest Plan management areas and standards represent statements of long-term management direction. Such direction and the rate of implementation are largely influenced by and dependent on the annual budgeting process. The NFS budget for FY 2013 without earmarks or returns on receipts of timber sales under the Knutson-Vandenberg Act was $8.7 million, down $3.1 million from FY 2012.

The Ouachita National Forest

The Ouachita National Forest (Ouachita NF, Forest, or ONF) is located in western Arkansas and southeastern Oklahoma. As of September 2013, the Ouachita NF contained approximately 1.8 million acres of National Forest System (NFS) lands in Arkansas and Oklahoma. There are approximately 2.7 million acres within the boundary of the Forest as established by Congress, also known as the proclamation boundary. Not all land within the proclamation boundary is a part of NFS managed lands. Privately owned lands within the proclamation boundary total nearly 1 million acres.

The Ouachita NF is divided into five 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 two Oklahoma counties: LeFlore and McCurtain. The Ouachita NF Supervisor's Office is located in Hot Springs, Arkansas. Individual Ranger Districts are shown in the map below. 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



Monitoring of the Forest Plan

The 2005 Land and Resource Management Plan (Forest Plan) for the Ouachita National Forest (Ouachita NF) provides broad, strategic direction for managing the land and its resources. The Forest Plan sets out the vision, desired conditions, priorities and objectives as well as standards to achieve the desired conditions and priorities. The Forest Plan direction provides a framework to guide future management decisions and actions. Over time it is necessary to assess progress toward achieving the desired conditions, meeting the objectives, and adhering to the standards in the Forest Plan. A cycle of adaptation is formed when management direction in the Forest Plan

is implemented, reviewed, and then adjusted in response to knowledge gained through monitoring and evaluation. Monitoring is conducted by Forest Service resource specialists; Forest Service research scientists; universities; state, federal, and resource agencies; and other cooperators. Persons who contributed data, assisted in compilation of data, or helped to prepare this Monitoring and Evaluation Report (M&E Report) are listed in Appendix A to this report.

Purpose of the Monitoring and Evaluation Report

The 2005 Forest Plan was completed under 36 CFR Part 219, also known as the 1982 National Forest Management Act. 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 shall recommend to the Forest Supervisor such changes in management direction, revisions, or amendments to the forest plan as are deemed necessary." Thus, the purpose of the M&E Report is to identify needed changes to management on the Ouachita NF utilizing the results of monitoring and evaluation. The M&E Report combines the results of the evaluations that occur each year into a biennial summary document. Based on the data gathered during monitoring, trends can be established and management corrections made, as necessary. Monitoring helps to track progress toward achievement of Desired Conditions (Forest Plan, Pages 6 – 43) and Plan Objectives (Forest Plan, Pages 58 – 69); implementation of Standards (Forest Plan, Pages 73 – 122); and occurrence of environmental effects, as predicted in the Environmental Impact Statement prepared for the Forest Plan. Monitoring indicates whether or to what extent Ouachita NF management is addressing plan priorities. The evaluation of monitoring results allows the Forest Supervisor to initiate actions to improve compliance with management direction where needed, improve cost effectiveness, and determine if any amendments to the Forest Plan are needed to improve resource management.

Organization of the Monitoring and Evaluation Report

For Monitoring Reports completed for years FY 2006 – FY 2009, the M&E Report was structured similarly to the Forest Plan. However, over the course of those years, it became evident that a more cohesive accounting of plan progress could be achieved through consolidating all monitoring by subject matter. Beginning with the FY 2011 M&E Report and continuing forward, the format changed to a summary of monitoring and evaluation by subject, and topics are not repeated in various places throughout the report. Also, beginning with this FY 2012 and FY 2013 M&E report, in compliance with the 2012 Plan Rule, production of an annual monitoring report will not be continued and reporting will occur biennially.

Implementation of the Forest Plan

The 2005 Forest Plan (Forest Plan) for the Ouachita NF 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 undergo review for compliance with the National Environmental Policy Act (NEPA), the National Historic Preservation Act, and the Endangered Species Act. The Forest Plan is implemented through project work primarily accomplished at the District level.

Project Decisions Made in Fiscal Year 2012 and 2013

For additional information, contact Lisa Cline at (501) 321-5202 or Caroline Mitchell at (501) 321-5202

Decisions to implement management actions fall into two categories: non-documented and documented. Some routine management actions do not require documented decisions, *i.e.* road and trail maintenance. Other actions that may affect the human environment require documented decisions like timber harvest and prescribed burning.

Appendix B to this report contains a list of 81 projects involving every Ranger District on the Ouachita NF for which NEPA decision documents were signed from 10/01/2011 through 09/30/2013. Of the 81 decisions, 21 are decision notices and 60 are decision memos. 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.

The list of projects was derived from the Planning, Appeals, and Litigation System (PALS). The PALS database is used to track project planning and NEPA decision data and to generate the quarterly Schedule of Proposed Actions (SOPA). Quarterly and "live" SOPA reports are available at the following internet address: www.fs.fed.us/sopa.

Implementation Monitoring Reviews

For additional information, contact Betty Crump at (501) 321-5202

An Implementation Monitoring Review (IMR) is focused on reviewing how well Forest Plan direction is translating to the on-the-ground work that is occurring at the project level. The report from an IMR provides managers with information that may contribute to adaptive management adjustments. The Rocky Branch Watershed Project on the Mena/Oden RD Implementation Monitoring Review (IMR) was conducted on September 12, 2012; and the combined Buffalo Creek 1 and Buffalo Creek 2 Watershed Projects, and the Panther Creek CE Project IMR (Buffalo Creek Project) on the Oklahoma RD was conducted on February 7, 2013. These IMRs were undertaken to evaluate if the projects were planned, documented, and implemented on the ground in accordance with the EA and in compliance of the 2005 Forest Plan, as well as agency and regional guidelines. These reports are summarized below and incorporated into this overall monitoring report as Appendix C.

Rocky Branch Watershed IMR: The primary objectives were to review the Dry Oak Woodland and the Pine Woodland restoration efforts. Other aspects of the project that were reviewed include: timber harvest, silviculture activities, non-native invasive species control activities, wildlife habitat improvements, soils/SMAs, roads/roads construction and fire. Overall, the Review Team concluded that the planning and on-going implementation for the Rocky Branch watershed project on the Mena/Oden RD was commendable as the first dry oak woodland restoration effort

for the Forest since the 2005 Forest Plan was signed. The on-going pine woodland restoration efforts were a good start, but more work is planned/needed to achieve appropriate results. The Review Team also concluded that the project activities were well thought out, followed an integrated resource approach, were well documented, and that those actions reviewed in the field were in compliance with Forest Plan standards.

Buffalo Creek Project IMR: The primary objectives were to review the management under the Revised Land and Resource Management Plan (RLRMP) direction for Management Areas 22 (Renewal of the Shortleaf Pine-Bluestem Grass Ecosystem and Red-Cockaded Woodpecker Habitat) and 9 (Water and Riparian Communities). Aspects of the project that were reviewed include: silviculture activities, wildlife habitat improvements, non-native invasive species control activities, soils/SMAs, roads/roads construction, timber harvest, and fire. Overall, the Review Team concluded that the planning and on-going implementation for the Buffalo Creek Project was commendable as objectives of the activities were to restore the pine woodland condition towards renewal of the Shortleaf Pine-Bluestem Grass Ecosystem and Red-Cockaded Woodpecker Habitat. The on-going pine woodland restoration efforts were a good start, and more work is planned/needed to achieve appropriate results. The Review Team also concluded that the project activities were well thought out, followed an integrated resource approach, but were not well documented in the environmental assessment. Those actions reviewed in the field were for the most part, in compliance with Forest Plan standards.

General Forest

Landownership 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 (501) 321-5202

Forest Plan Objective 17 addresses the need for boundary management. Boundaries were marked or maintenance performed on approximately 748 miles of National Forest System boundary during FY 2006 through FY 2013. A summary of miles of boundary located or maintained since FY 2006 is shown in the tabulation below.

Miles of Boundary Located or Maintained, by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013
Miles	52.58	65.00	135.40	136.50	114.02	105.00	99.75	40.00

To protect land ownership title, 11 encroachments were resolved during FY 2012 and 12 were resolved in FY 2013. During FY 2006 thru FY 2013, 61 encroachments, trespass, or unauthorized occupations have been resolved. For future reports, use of the term “occupancy trespass” will be discontinued and “unauthorized occupancy” will be used.

Land Ownership Pattern and Land Exchanges

For additional information, contact Jessica Soroka at (501) 321-5202

The Forest Service conducts a fairly active lands program within allocated budgets. 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 the Forest Plan goals of land management. The tabulation below displays acres purchased since the Forest began implementing the 2005 Forest Plan.

Land Program, Acres Purchased by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013
Acres Purchased	120.00*	120.00	0.00	0.00	27.80	0.00	0.00	0.00

***Previous Monitoring Reports included 2,257 acres for FY2006 because acres acquired through tripartites were counted as purchases when they should have been counted as exchanges. The lands program considers them exchanges. The totals for the rest of the years also have tripartite acres in the exchange portion so now it is consistent.**

During FY 2012, 4.0 acres were exchanged by the Forest Service (2 acres to the Proponent and 2 acres to the FS). During FY 2011, nearly 261 acres were exchanged (221 acres to the Proponent and 40 acres to the FS) while during FY 2010, 160 acres were acquired by the Forest Service (exchanged) using timber sale receipts. This compares to FY 2009 when 260 acres were exchanged (140 to the proponent and 120 to the FS). No lands were exchanged during FY 2008, which was unusual. During FY 2007, there were 3,978 acres of lands exchanged (556 acres to the proponent and 3,422 acres to FS) as compared to FY 2006 72.95 acres of land exchanged (To Proponent, 31.95; to FS, 41.0).

Land Program, Acres Exchanged by FY, ONF

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

In FY 2006, 162.45 acres were sold. The first time that the Forest Service sold National Forest System lands other than by the Small Tracts Act was during FY 2006. Sales in FY 2006 were accomplished under PL 108-350 which gave the Forest authority to sell several administrative sites and three 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. During FY 2007, a 9.89 acre administrative site in Heavener, OK, containing three residential properties was sold. During FY 2009, 4.57 acres were sold compared to 0 acres sold during FY 2008. During FY 2010, one residential unit in Danville, AR with an accompanying 0.41 acres of land was sold. There were no acres of land sold during FY 2011 or FY 2012, and a little less than ½ acre sold in FY 2013.

Land Program, Acres Sold by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013
Acres Sold	162.45	9.89	0.00	4.57	0.41	0.00	0.00	0.45

Overall, the total of National Forest System lands has remained fairly stable, increasing by 5,061 acres from FY 2005 – FY 2013. The stable trend in National Forest System acreage illustrated below is likely to continue. If there is a need to exchange or purchase additional lands, the Forest will continue to apply the Landownership Strategy.

Land Totals by FY, ONF

Year	2005	2006	2007/2008	2009	2010	2011	2012	2013
Total NFS Acres	1,784,610	1,786,714	1,789,690	1,789,666	1,789,853	1,789,672	1,789,672	1,789,671
Change from Previous Year	+1,945	+2,104	-2976	-24	+187	-181	0	-0.65

Transportation System and Access Management

Transportation System

For additional information, contact Lea Moore at (501) 321-5202

There are four objectives stated for the Ouachita NF 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 percent 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 tabulation displays the total road miles listing miles in each of the categories for FY 2011. These data were unavailable for the FY 2012 and FY 2013 report, but will be updated as they become available.

Maintenance Level	FY 2011 Miles	Percentage
1 – BASIC CUSTODIAL CARE (CLOSED)	2560.35	44.2%
2 – HIGH CLEARANCE VEHICLES	2013.87	34.8%
3 – SUITABLE FOR PASSENGER CARS	1140.69	19.7%
4 – MODERATE DEGREE OF USER COMFORT	56.66	1.0%
5 – HIGH DEGREE OF USER COMFORT	18.47	0.3%
Grand Total	**5790.04**	100.0%

During FY 2012 and FY 2013, 1,625 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 FY 2012 and FY 2013, 38.6 miles of arterial/collector roads were reconstructed (11 roads), compared to 112.4 miles of arterial/collector roads reconstructed in FY 2011. During FY 2012 and FY 2013, 5.3 miles of new arterial/collector roads were constructed. The tabulation below shows arterial/collector roads reconstructed for FY 2012 and FY 2013 and since FY 2006.

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

Arterial/Collector Roads Reconstructed	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Miles	**15.56**	**6.44**	**6.44**	**1.94**	**7.96**	**11.35**	**37.6**	**0.99**
Number of Roads	**7**	**4**	**4**	**4**	**3**	**3**	**8**	**3**

Work has been accomplished to reconstruct local roads. During FY 2012 and FY 2013, 42.45 miles of local roads were reconstructed. The tabulation below 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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Miles	**55.4**	**34.20**	**28.17**	**1.94**	**13.62**	**14.71**	**28.50**	**13.95**

In addition to the 42.45 miles of local road reconstruction, during FY 2012 and FY 2013, 7.31 miles of local roads were constructed and added to the system during this same period. The following tabulation 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	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Miles	15.99	4.28	8.54	21.00	3.29	11.13	5.1	2.21
Number of Roads	22	NR	NR	8	5	11	2	4

NR=Not Reported

There were 56.3 miles of roads removed from the system (decommissioned) during FY 2012 and FY 2013. The following tabulation displays the miles of roads removed from the system by fiscal year.

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

Roads Removed from the System	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Miles	204.35*	12.30	2.70	2.04	0.00	20.70	28.3	28.0

* The seemingly large number of road closures in FY 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.

During FY 2012 and FY 2013, a total of $776,000 was spent on road maintenance including funds in the budget line item, CMLG, for construction and maintenance of legacy roads and trails. Funding under CMLG is for specific purposes, and the Forest does not receive funding in that category every year. Spending for road maintenance has not been previously tracked in the M&E Report, but will be included in succeeding years.

Bridge Inspections

For additional information, contact Gary Griffin at (501) 321-5202

Another facet of maintenance of the transportation system is a robust monitoring program of inspection of bridges and their condition. In inventory, there are 130 bridges on 73 roads within National Forest System management. Bridge inspection is a continuous process, and each year approximately 1/2 of those bridges are inspected. For FY 2012, 76 bridges were inspected (49 FS and 27 County). Over 85 percent of all bridges inspected were found to be free of any structural deficiency. For FY 2013, 54 bridges were inspected (45 FS and 9 County). Over 88 percent of all bridges inspected were found to be free of any structural deficiency. Those requiring maintenance have been entered into a maintenance inventory and will addressed as funding is available or closed if a deficiency becomes a safety hazard.

Access/Travel Management

For additional information, contact Alett Little at (501) 321-5202

Development of the Ouachita NF transportation system was substantially completed prior to 1985. 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/or use of temporary roads accomplished by using road purchaser provisions in the timber sale contract.

Funding for road maintenance has essentially remained flat for over ten years and has resulted in choices on the level and degree of maintenance needed, such as whether to close roads, 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 reduced on-the-ground work, and the reduced funding is expected to continue into the foreseeable future. Decisions about the operational level of all roads and even possible road closures will be discussed as the Ouachita NF moves forward.

There is one Forest Plan objective specific to travel management: *OBJECTIVE 26: "Designate and sign a system of roads and trails suitable for public access by motor vehicle, 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 (MVUMs).

Travel Management Program

Travel planning is intended to identify opportunities for the Forest transportation system to meet current or future management objectives, based on ecological, social, cultural, and economic concerns. The 2005 Forest Plan contained the following desired condition, *"Recreation opportunities for OHV (Off-Highway Vehicle) enthusiasts will be available within an integrated system of designated roads and trails."*

On November 9, 2005 the Forest Service enacted regulations to combine and clarify existing regulations at 36 CFR part 212 governing administration of the forest transportation system and regulations at 36 CFR part 295 governing use of motor vehicles off National Forest System (NFS) roads. A nation-wide Travel Management Program was established with a final rule issued as part 212, Travel Management, covering the use of motor vehicles on NFS lands. The regulations implemented Executive Order (EO) 11644 (February 8, 1972), ''Use of Off-Road Vehicles on the Public Lands,'' as amended by EO 11989 (May 24, 1977). Those Executive orders directed Federal agencies to ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands. The Forest Service *Travel Management Rule* has three parts:

- Subpart A – Administration of the Forest Transportation System;
- Subpart B – Designation of roads, trails, and areas for motor vehicle use; and
- Subpart C – Use by over-snow vehicles.

During FY 2010, the Forest, under Subpart B of the Travel Management Rule (designation of roads, trails, and areas for motor vehicle use), completed a travel management environmental analysis and signed the NEPA decision. All related GIS and INFRA data were refined and

updated. As a part of the project, the Forest completed the forest-wide travel analysis which provided data for the Motor Vehicle Use Maps.

Five Motor Vehicle Use Maps (MVUMs), one for each administrative cluster of Ranger Districts, were prepared displaying the routes and, in some cases, seasons designated for motor vehicle use and are updated annually to reflect changes.

MA – 8 Administrative Sites

Management Area 8 consists of district ranger offices, district work centers, district residences, Forest Service communication facilities and sites for communication facilities under special use permit, and the administrative site within the seed orchard. Roads, rights-of-way, utility easements, and other linear features are not included as a part of Management Area 8 but are interspersed within other management areas. The Desired Condition for Administrative Sites is that visitors will encounter a variety of well-maintained facilities, including roads, buildings, parking areas and other facilities, typically in a forest setting with a high level of site reinforcement and regularly occurring maintenance.

Facility Operation and Maintenance

For additional information, contact Bubba Brewster (501) 321-5202

Objective 31 of the Forest Plan is to *"Eliminate three leased facilities by 2015."* Since FY 2006, good progress has been made on this objective. The leased office for the Tiak Ranger District was eliminated in FY 2009 after completing and moving into the new Leadership in Energy and Environmental Design (LEED) certified District Office in Hochatown. 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. The new office would take the place of the leased Poteau office in Waldron. Due to budget constraints, the Forest has no known date for anticipated design or construction of this proposed new office.

Forest Plan objective 32 is to *"Eliminate 30 percent of other nonessential administrative facilities by 2015."* Presently, there are five Ranger District clusters and there is a need to consolidate administrative facilities remnant from the administration of twelve once-separate Ranger Districts. Identifying nonessential facilities is limited until District consolidation plans are complete. Two administrative facilities were decommissioned and sold during FY 2009: the Caddo Trailer (Infra #02016) and the Fourche Ranger Residence (Infra #04002). During FY 2010 two additional facilities were decommissioned and were sold during FY 2013: Kiamichi Ranger Dwelling and shed (Infra #06002 & #06003, respectively).

Objective 33 calls for *"public facilities to [be upgraded to] Architectural Barriers Act standard by 2015."* Facility inspections are undertaken each year. A complete inventory of facilities that require additional work to make them accessible was to be undertaken during FY 2012, and the work will be programmed as funding is made available. The building inventory has been updated to show which buildings are accessible and which are not.

Executive Order (EO) 12902 (March 8, 1994), Energy Efficiency and Water Conservation at Federal Facilities, and Executive Order 13123 (June 3, 1999), Greening the Government Through Efficient Energy Management, 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 percent of administrative buildings needing upgrades by 2015."

The Forest upgraded three heating ventilation and air-conditioning (HVAC) systems in offices during FY 2012 and FY 2013 to increase efficiency and has installed insulation in one office as well. The Forest contracted to inventory all HVAC systems and their condition in 2013. An energy audit was conducted at south complex of the Supervisor's office (SO South). The audits will be used to determine which additional offices will need energy efficiency upgrades. The Forest has also been collecting utility information on administrative buildings and is conducting a survey of all HVAC systems at administrative sites in order to develop a schedule for replacement of older, less efficient systems.

Annually, buildings are inspected for compliance with health and safety standards in accordance with Forest Plan Objective 35. Since FY 2005, buildings inspected by FS Engineering personnel/staff either met or were corrected to meet standard. Each year, at least one-third of the fire, administration and other buildings and some recreation buildings are inspected by the Engineering Section. No information was available for FY 2012 or FY 2013. For FY 2011, the facility inventory included 341 buildings that were categorized as follows: Existing – Active, Existing – Inactive, or Existing – Excess. Of those 341 buildings, 292 had a Facility Condition Rating (FCR) rating of "Good" or "Fair." The percentage of buildings with an FCR of "Good" or "Fair" was 86 percent. Fourteen buildings were rated "Poor" and 35 were unrated. All of the "unrated" buildings are at Camp Ouachita.

Special Uses

For additional information, contact Elaine Sharp at (501) 321-5202

Uses of National Forest System lands are authorized by Special Use permits, easements and leases. As shown in the tabulation below, there were 538 authorizations of various types on the Ouachita NF during FY 2012 and 529 authorizations issued in 2013. The total number of authorizations issued is relatively consistent between years 2012 and 2013. Road access requests comprise the bulk of the special use requests. Efforts to close road authorizations that are no longer needed due to land adjustments are reflected in the reduction of permits issued in 2013.

Communication and utility corridor uses comprise the next highest categories of use requests. The number of utility permits issued is not expected to change; however, the amount of National Forest System land occupied by utilities will continue to increase as existing permits are amended to provide additional National Forest System land for utility service provided to forest inholdings.

A measure of success in assuring that uses of National Forest System land comply with the terms and conditions of the authorizations is the number of permits administered to standard. In 2012, the Ouachita NF administered 381 permits to standard with resource issues resolved. In 2013, the Forest reported 380 permits administered to standard with resource issues resolved.

The 157 permits in 2012 and 149 permits in 2013 not administered to standard were due to other priorities competing with completing all inspections, not because of unresolved resource conflicts. In 2012, there were 12 known unauthorized occupancies. None of these were resolved in 2012 and 1 was resolved by temporary special use permit in 2013. The number of unauthorized occupancies continues to increase. Special Use Permits by type are shown by FY below.

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

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

*A list of the approved communication sites and those pending approval as of September 2013, is included in Appendix D.

The Forest continues to acquire road rights of way based on need determined through a roads analysis. Six road easements were acquired in 2012 and one easement in 2013. In 2013, the Ouachita NF defended the land title for two road easements acquired in prior years where the owner of the servient estate blocked access to a National Forest System road.

Commodity and Commercial Uses

Three types of commodities, commercial, or special uses are discussed:

- Mineral and Energy Development
- Livestock Grazing or Range Activities
- Timber

Minerals and Energy Development

For additional information, contact Andrew McCormick at (501) 321-5202

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

> *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.*

As reported since FY 2006, financial investment and potential threats from geologic hazards to human life or natural resources remain low on the Ouachita NF in both Arkansas and Oklahoma.

Each year, the number of gas leases and mineral cases are reported. Over time, it appears that the number of gas leases has increased; however in FY 2011 the Bureau of Land Management retracted all of the gas lease consents from Arkansas and no new ones were auctioned.

Gas Leases and Mineral Cases by FY, ONF

	Gas Leases	Minerals Cases
FY 2006	403	--
FY 2007	565	75
FY 2008	827	67
FY 2009	837	57
FY 2010	800	39
FY 2011	0*	0
FY 2012	212	20
FY 2013	215	20

*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 (501) 321-5202

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

The Range program has been in decline for several years, but has been relatively stable for the past four years.

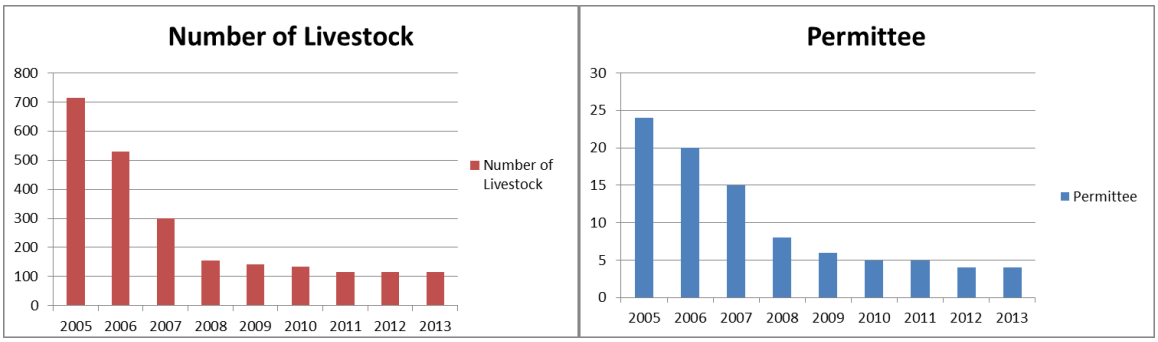
Number of Livestock, Permittees, and Active Allotments by FY, ONF

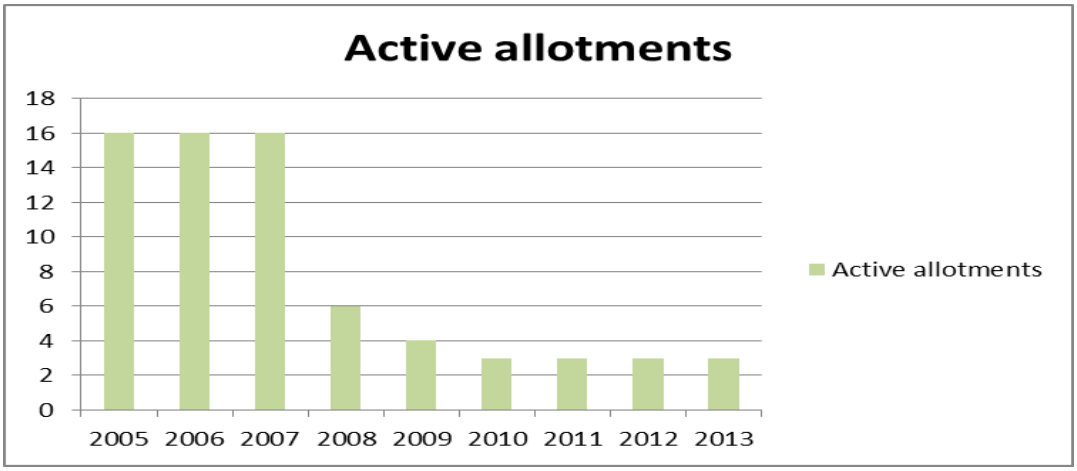
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Number of Livestock	715	530	300	154	142	133	116	116	116
Number of Permittees	24	20	15	8	6	5	5	4	4
Active Allotments	16	16	16	6	4	3	3	3	3

Livestock Grazing – Trends Related to Forest Plan Objectives and/or Desired Conditions

Interest in grazing on the Ouachita NF has declined and is not expected to increase in the future. All grazing on the National Forest is in forest and/or woodlands. The number of cattle being grazed is also on the decline: therefore, resource damage from grazing is minimal. Such use is consistent with the two 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 at 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 condition. All indicators [Number of Livestock, Permittees, and Active Allotments] show that the Range program has been on a decline for the last 8 years. This trend is expected to continue. See graphs below.





Timber Sale Program

Firewood

For additional information, contact Ray Yelverton at (501) 321-5202

Demand for firewood remains high but decreased in FY 2012 and FY 2013 when compared to previous years. The Forest Plan contains two 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 decision establishing designated routes, there is a need to note access on firewood permits.

The cords of firewood sold by FY are shown in the following tabulation.

Cords of Firewood Sold (Cords = CCF x 1.54) by FY, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013
Cords Sold	2,107	1,650	1,686	1,299	1,364	1,609	744	608

Source: Timber Cut and Sold Report

Timber – Allowable Sale Quantity (ASQ)

For additional information, contact Ray Yelverton at (501) 321-5202

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 68.86 percent of ASQ since FY 2006, and the following tabulation shows volumes sold by FY. 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. The ASQ for the Ouachita NF is 27 million cubic feet per year (270,000 CCF).

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

FY	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
Average	176,726	1,599	9,206	241	185,933	1,839
Average Total	178,325		9,447		187,772	

Source: CDW – PTSAR - Reports PTSR201F & PTSR202F

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 FY 2006, the Ouachita NF has sold an average of over almost 94 percent of the 200,000 CCF objective. The timber volumes offered and sold by FY are shown in the following tabulation. The objective of at least 200,000 CCF per year was exceeded in three years, FY 2007, 2008 and 2011.

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

	FY 2006*	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Volume Offered	75,699	198,606	215,206	161,741	204,688	198,790	161,287	181,873
Volume Sold	197,119	206,306	201,858	175,388	189,283	200,053	178,426	153,743
Timber Budget ($)	6,722,677	7,182,961	7,216,888	7,093,596	7,960,905	8,439,629	7,966,274	6,135,978
$/CCF Offered	88.81	36.17	33.53	43.86	38.89	42.45	49.39	33.74
$/CCF Sold	34.10	34.82	35.75	40.45	42.06	42.19	44.65	39.91

Annual Averages

Volume Offered	Volume Sold	Timber Budget ($)	$/CCF Offered	$/CCF Sold
174,736	**187,772**	**7,339,864**	**42.01**	**39.09**

*During FY 2006, the Ouachita NF reverted to Sold Volume as the target vs. Volume Offered. Volume Offered in FY 2005 but not sold until FY 2006 was credited towards the Sold target in FY 2006 and the offered target in FY 2005.
**If FY 2006 is not considered, the average $/CCF Sold for FY 2007 through FY 2013 is $39.84.

The following tabulation compares actual acres sold to proposed and probable activities as presented in the 2005 Forest Plan.

Actual Acres Sold Compared to Proposed and Probable Activities, ONF

Activity By Acres or Acres Sold	Range of Proposed/ Probable Annual Activity	Actual Annual Activity FY 2006	Actual Annual Activity FY 2007	Actual Annual Activity FY 2008	Actual Annual Activity FY 2009	Actual Annual Activity FY 2010	Actual Annual Activity FY 2011	Actual Annual Activity FY 2012	Actual Annual Activity FY 2013	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	2,454
MA 14	4,000-4,700	1,374	3,981	2,968	1,685	2,033	1,274	2,195	745	2,032
MA 15	140	0	0	179	0	0	0	0	179	45
MA 16	--	401	97	39	0	21	33	0	0	84*
MA 17	250	52	0	0	78	0	297	87	83	106
MA 21	160	232	0	0	0	0	0	0	0	29
MA 22	1,000-1,200	599	285	0	85	216	233	40	144	200
Other MAs	250	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	1247
MA 14	7,200-7,850	1,307	1,972	1,031	508	378	0	0	0	650
MA 16	1,000-1,300	1,841	676	114	0	0	375	0	0	376
MA 17	--	19	0	0	636	0	0	0	0	94*
MA 19	800-850	0	417	101	147	337	0	0	0	125
Other MAs	--	49	0	0	0	0	69	0	0	17*
Commercial Thinning	20,000-28,500	13,060	9,922	10,981	12,407	10,864	10,978	10,517	8,058	10,847
MA 14	10,000-13,700	5,946	7,368	9,070	7,722	5,700	5,512	6,190	3,512	6,378
MA 15	1,000	0	0	288	0	0	0	0	288	82
MA 16	--	845	608	0	0	764	1,493	0	175	555*
MA 17	400-500	60	0	67	415	0	1,462	160	299	308
MA 21	1,500-1,600	493	0	615	1,099	1,000	0	272	145	453
MA 22	7,000-8,200	5,571	1,946	534	3,171	2,294	1,780	3,895	3,639	2,854
Other MAs	--	145	0	0	0	1,106	731	0	0	283*

Source for Actual Acres: TIM *Average is for 2007-2013

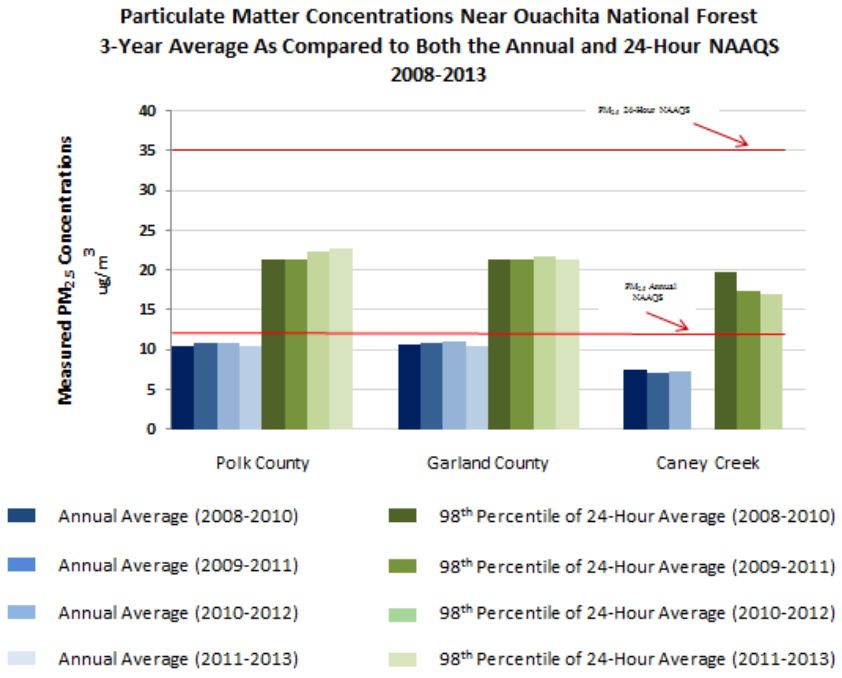
Air Quality

For additional information, contact Daniel Stratton at (828) 257-4226

Air pollution often has a subtle but critical impact on ecosystems and vistas, and can alter ecosystems by harming plants and animals, or changing soil or water chemistry. Ecosystems then become more vulnerable to damage from insects and diseases, drought, or invasive species. Additionally since many visitors to National Forests value pristine areas with magnificent vistas, air pollution can lessen their experience and enjoyment of National Forests.

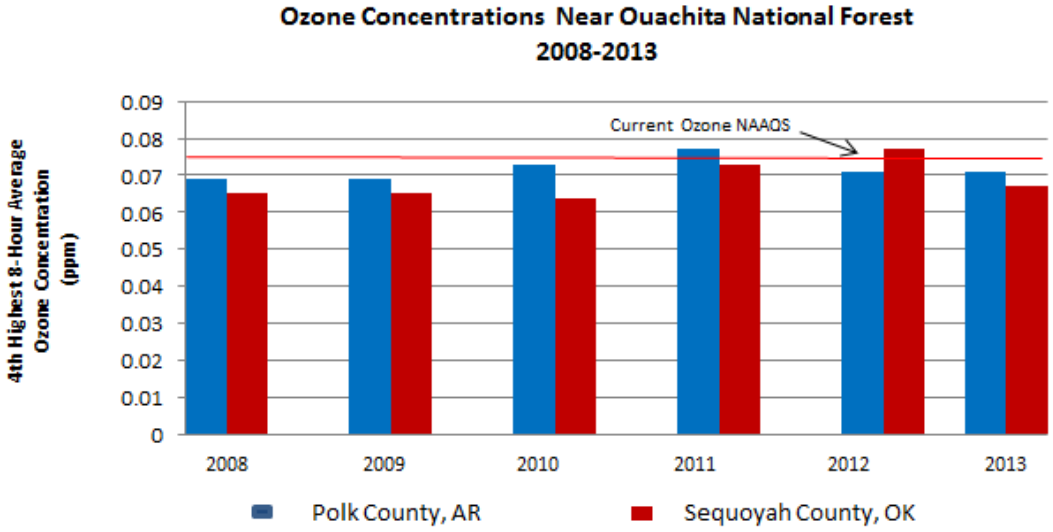
Within the Ouachita NF, air pollutants such as ozone, fine particulate matter, and acidic deposition can cause negative impacts to flora, visibility and water. Ambient monitoring of fine particulate matter, ozone, and visibility-impairing pollutants occurs on or near the Forest to evaluate any potential affects. Additionally, monitoring of acidic deposition levels occurs nearby and is representative of conditions on the Forest.

Particulate Matter: Particulate matter is a mixture of extremely small 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 graphic below show the measured $PM_{2.5}$ levels at the three fine particulate matter monitoring sites located near the Ouachita NF.



As shown, all concentrations levels are below the 24-hour and annual air quality standards. The 2013 data from the Caney Creek monitoring site is not yet available at the time of this report.

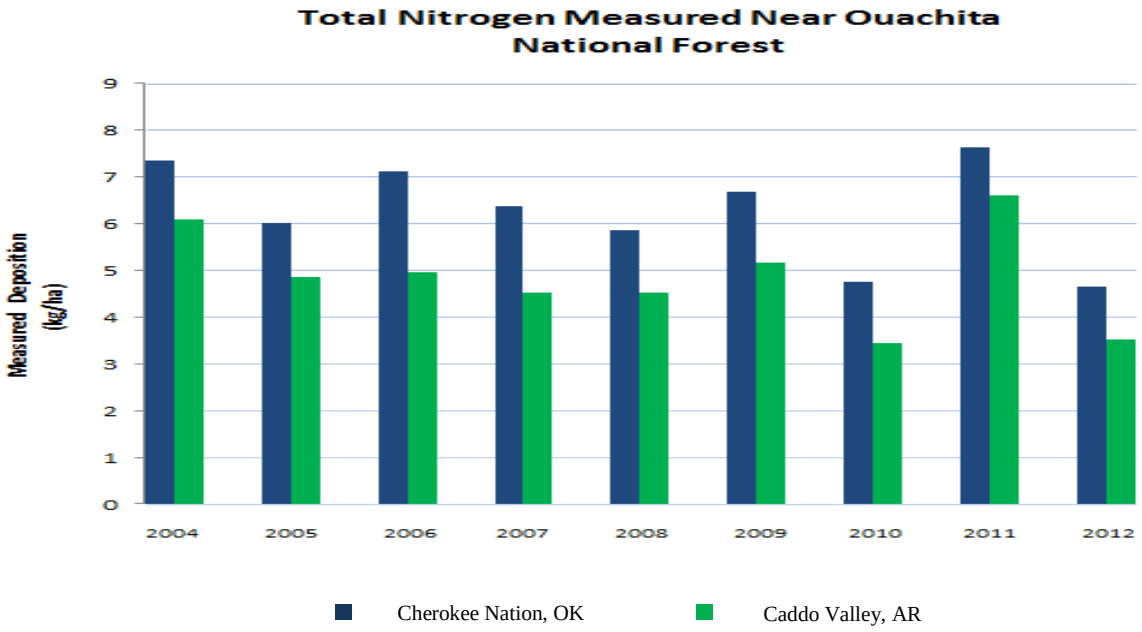
Ozone: Ozone is a pollutant formed by emissions of nitrogen oxides and volatile organic compounds in the presence of sunlight. At elevated concentrations, it causes human health concerns as well as negative impacts to vegetation. The US Environmental Protection Agency (EPA), as directed by Congress, 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 five years based on most recent scientific research, and as a result, more stringent standards may be proposed sometime in the future. The graphic below shows the measured concentrations of ozone at the two 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. Therefore, both of these ozone monitor locations near the Ouachita NF exceeded the NAAQS.

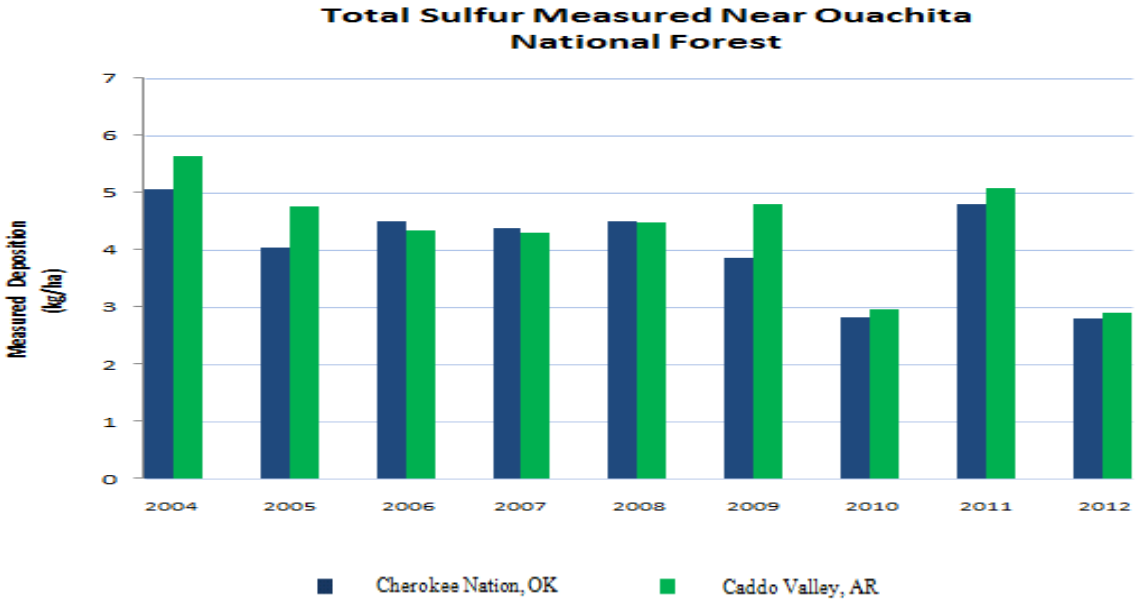


Acidic Deposition: Deposition of acidic compounds onto the Forest can cause harmful effects to both aquatic and terrestrial ecosystems. Such deposition can occur in three forms: dry, wet and cloud. Dry deposition is the direct fallout of fine particulates and gases from the atmosphere. Wet deposition 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 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; http://epa.gov/castnet/javaweb/index.html) operate two sites near the Ouachita NF. Neither of these locations are 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.

The following graphs show the total sulfur and total nitrogen deposition trends for the Cherokee Nation (Adair County, OK) and Caddo Valley (Clark County, AR) monitoring locations as reported in the CASTNET database. From 2004 through 2010 nitrogen and sulfur deposition rates indicate a steady decrease in acidic deposition. In 2011 both nitrogen and sulfur rates increased sharply for the year. In 2012, both deposition rates decreased over 30%.


Total Nitrogen Measured Near Ouachita National Forest
Measured Deposition (kg/ha)
0
1
2
3
4
5
6
7
8
9
2004
2005
2006
2007
2008
2009
2010
2011
2012
Cherokee Nation, OK
Caddo Valley, AR


Total Sulfur Measured Near Ouachita National Forest
Measured Deposition (kg/ha)
0
1
2
3
4
5
6
7
2004
2005
2006
2007
2008
2009
2010
2011
2012
Cherokee Nation, OK
Caddo Valley, AR

Terrestrial Community Types

Terrestrial communities include all non-aquatic Ouachita Mountain and West Gulf Coastal Plain Ecological Community Systems listed by NatureServe (2003). There are ten terrestrial ecosystems (and three subsystems):

- **Ouachita Shortleaf Pine-Oak Forest and Woodland, comprised of:**
  - **Ouachita Shortleaf Pine-Oak Forest**
  - **Ouachita Shortleaf Pine-Oak Woodland**
  - **Ouachita Shortleaf Pine-Bluestem (Red-cockaded Woodpecker Habitat)**
- **West Gulf Coastal Plain Pine-Hardwood Forest**
- **Ouachita Dry-Mesic Oak Forest**
- **Ouachita Mesic Hardwood Forest***
- **Ouachita Montane Oak Forest***
- **Ouachita Dry Oak Woodland***
- **Ouachita Novaculite Glade and Woodland***
- **Central Interior Highlands Dry Acidic Glade and Barrens***
- **Central Interior Acidic Cliff and Talus***
- **Southern Arkansas Calcareous Prairie***

*These communities are considered Rare Upland Communities and are discussed as a part of Management Area 6 below.

Desired conditions by terrestrial ecosystem are described on pages 6-18 of the 2005 Forest Plan. These data were prepared for the Five-Year Review of the Forest Plan (2010) and their areal extent is displayed here for comparison purposes. The next comparison of data will occur in 2015 at the next five-year review.

Areal Extent of NatureServe Communities, ONF

NatureServe Community	2005 Percent of Forest	2010 Percent of Forest
Ouachita Shortleaf Pine-Oak Forest and Woodland CES202.313 (3 Sub-Communities)		
1) Ouachita Shortleaf Pine-Oak Forest	**53.4**	**42.6**
2) Ouachita Pine-Oak Woodland	**13.6**	**15.7**
3) Ouachita Shortleaf Pine – Bluestem	**<0.1**	**9.7**
West Gulf Coastal Plain Pine-Hardwood Flatwoods CES203.378	**<0.1**	**0.4**
Ouachita Dry-Mesic Hardwood Forest CES202.708	**12.4**	**14.8**
Ouachita Mesic Hardwood Forest CES202.043	**1.8**	**0.7**
Ouachita Montane Oak Forest CES202.306	**0.6**	**0.7**
Ouachita Dry Oak Woodlands CES202707	**0.3**	**0.7**
Ouachita Novaculite Glade and Woodland CES202.314	**<0.1**	**0.2**
Central Interior Acidic Cliff and Talus CES202.689	**0.3**	**<0.1**
Central Interior Highlands Dry Acidic Glade and Barrens CES202.692	**0.2**	**0.3**
Southern Arkansas/Oklahoma Calcareous Prairie CES203.377	**<0.1**	**<0.1**
Ouachita Riparian CES202.703	**13.2**	**13.2**
Ouachita Mountain Forested Seeps CES202.321	**<0.1**	**<0.1**
South-Central Interior Large Floodplain CES202.705	**<0.1**	**<0.1**
West Gulf Coastal Plain Small Stream and River Forest CES203.487	**0.3**	**0.3**
West Gulf Coastal Plain Wet Hardwood Flatwoods CES203.548 (Red Slough WMA)	**0.2**	**0.5**

Data Sources: The vegetation data for the 2005 Forest Plan were derived from the Continuous Inventory of Stand Condition (CISC) vegetation tracking system, the landtype associations, aspect, average annual rainfall, and geology. The fire history was derived from districts' maps/information, and the road density was derived from the 2005 roads layer. The 2010 vegetation data and fire history are derived from the most current and updated inventory within the Forest Service Vegetation (FSVeg) database, the Forest Activity Tracking System (FACTS) and the Geographical Information System (GIS) maps. Road density was derived from the 2010 roads layer.

Common Pine-Dominated Upland Communities: Habitat Diversity Emphasis, Old Growth, and Pine/Bluestem Grass Ecosystem

For additional information, contact Betty Crump at (501) 321-5202

There are five communities regarded as common pine-dominated upland communities. These include the following:

Ouachita Shortleaf Pine-Oak Forest and Woodland
Ouachita Shortleaf Pine-Oak Forest
Ouachita Shortleaf Pine-Oak Woodland
Ouachita Shortleaf Pine-Bluestem Woodland (includes Red-cockaded Woodpecker Habitat)
West Gulf Coastal Plain Pine-Hardwood Forest

Ouachita Shortleaf Pine-Oak Forest and Woodland

This system represents forests and woodlands of the Ouachita Mountain region of Arkansas and adjacent Oklahoma in which shortleaf pine is an important or dominant component. The shortleaf pine-oak forest and woodland system comprises approximately 69 percent of the Forest and occurs in all management areas to some extent. This system has been divided into three subsystems (pine-oak forest, pine-oak woodlands, and pine-bluestem woodlands).

Ouachita Shortleaf Pine-Oak Forest

Ouachita shortleaf pine-oak forest represents the most densely wooded, generally closed-canopy component of the pine-oak system. In 2010, the pine-oak forest subsystem made up approximately 62 percent of the pine-oak system and occupied about 45 percent of the Forest. Previous analysis reported in the Five-Year Review found “Poor” scores for early seral stage and road density as well as the “Fair” scores for fire regime and areal extent.

Ouachita Shortleaf Pine-Oak Woodland

Ouachita shortleaf pine-oak woodland (332,681 acres) is one of two relatively open-canopy, fire-dependent subsystems with abundant herbaceous ground cover. Based on an analysis of landtype associations, 20-45 percent of the pine-oak system could be in pine-oak woodland conditions, given an appropriate combination of thinning and burning. Currently, woodland restoration activities have decreased this woodland subsystem to 23 percent of the shortleaf pine-oak communities and to 16 percent of the total Forest. Previous analysis reported in the Five-Year Review found improved overall SVE condition score for the pine-oak woodlands when compared to FY 2005.

Ouachita Shortleaf Pine-Bluestem Woodland (includes Red-cockaded Woodpecker Habitat)

Ouachita shortleaf pine-bluestem woodland (172,914 acres) represents the most open-canopy, pine-dominated, fire-dependent component of pine-oak systems on the Ouachita NF. Currently, this subsystem constitutes approximately 14 percent of the shortleaf pine-oak dominated communities and almost 10 percent of the Forest.Previous analysis reported in the Five-Year Review found improved overall SVE condition score for the pine-Bluestem Woodland from Fair to Good Condition when compared to FY 2005.

West Gulf Coastal Plain Pine-Hardwood Forest

This West Gulf Coastal Plain (8,007 acres) ecological system represents 0.4 percent of the Ouachita NF and consists of forests and woodlands dominated by shortleaf pine and loblolly pine in combination with a variety of dry to dry-mesic hardwood species. Previous analysis found this ecological community type to be holding steady or slightly declining due to less than optimal creation of early seral habitat, road density and need for more frequent fire.

Fire regime includes how frequently fires occur and the season of the burn (dormant or growing season). 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 annual prescribed fire acres burned by community for FY 2012 and 2013 improved from FY 2011.

MA 6 – Rare Upland Communities

For additional information, contact Betty Crump at (501) 321-5202

The seven relatively rare upland communities described in this section comprise approximately 2.6 percent of the total Forest area. These systems are usually small, isolated, disjunctive, and are generally "embedded" in a larger landscape matrix. These communities are maintained primarily through naturally occurring physical conditions such as elevation, soil moisture conditions, and soil productivity. Historically, wildfire was a major influence in all but the mesic hardwood forest.

Given the emphasis on restoration of the health of all communities, inventories for rare upland communities are becoming more comprehensive. Cumulatively, the effects of Forest Plan implementation, including inventory, restoration, maintenance, and protection of rare upland communities are critical to the sustainability of these habitats and to the viability of associated species.

The seven rare upland communities are as follow:

- **Ouachita Mesic Hardwood Forest**
- **Ouachita Montane Oak Forest**
- **Ouachita Dry Oak Woodland**
- **Ouachita Novaculite Glade and Woodland**
- **Central Interior Highlands Dry Acidic Glade and Barrens**
- **Central Interior Acidic Cliff and Talus**
- **Southern Arkansas Calcareous Prairie**

The Five-year Review found that three of the seven communtity types had condition scores that improved and four had scores that had declined slightly. The Southern Arkansas Calcareous Prairie has been burned appropriately and is improved to a "Very Good" score. Short discussions of each community type follow.

Ouachita Mesic Hardwood Forest

The Ouachita Mesic Hardwood Forest system (12,685 Acres) is found on toeslopes and valley bottoms, as well as on north-facing and other protected slopes and ravines. In this system, mesic tree species dominate. While a decline in canopy closure and increase in late seral stage vegetation was noted during the last evaluation, percent of this community treated with fire has improved. Overall the condition score for the mesic hardwood forests has improved from the 2005 score of 2.29 ("Fair") to the 2010 SVE score of 2.63 ("Good").

Ouachita Dry-Mesic Oak Forest

This system, found throughout the Ozark and Ouachita Highlands, constitutes almost 15 percent of the Forest (316,476 Acres). Natural mortality through oak decline, wind, drought, occasional fires, and infrequent ice storms influence this system. Similar to the Ouachita Mesic Hardwood Forest, a decline in canopy closure and increase in late seral stage vegetation was noted during the last evaluation, but percent of this community treated with fire has improved.
Overall SVE condition score of 1.71 for the dry-mesic oak forest declined from 2005 to a 2010 score of 1.57, both "Fair."

Ouachita Dry Oak Woodland

Oak species dominate the Ouachita Dry Oak Woodland system (12,755 acres, less than 1 percent of the Forest), which has an understory of herbaceous and shrub species. Drought stress and associated landscape fire are the major natural influences on this system. The fire regime for Ouachita dry oak community is improving as is the amount of herbaceous ground coverage; however, like other similar communities late seral stage is increasing. Overall SVE condition score for Ouachita Dry Oak Woodland has improved from the 2005 score of 1.29 ("Poor") to a 2010 score of 1.64 ("Fair").

Ouachita Montane Oak Forest

This system of Ouachita Montane Oak Forest (12,451 acres) represents oak-dominated forests of the highest elevations in the Ouachita Mountains. Canopy trees are often stunted due to the effects of ice, wind and cold conditions, in combination with shallow, rocky soils, fog, occasional fire, and periodic severe drought. Some stands form almost impenetrable thickets ("elfin forests"). The current vertical structure condition is a self-maintaining scrubby or stunted, oak-dominated system maintained by naturally occurring processes and, when needed, prescribed fire. Overall SVE condition score of 2.33 ("Fair") for the montane oak forest declined from 2005 to 1.83 for the 2010 value, due to lack of fire during the growing season. Overall, the percent burned every 10 years increased substantially.

Ouachita Novaculite Glade and Woodland

The Ouachita Novaculite Glade and Woodland system (3,245 acres) represents a mosaic of glades and woodlands found on novaculite substrates in the central Ouachita Mountains of western Arkansas. Examples of this system generally occupy ridgetops at 1,476 – 2,100 feet elevation. They are a mosaic of small woodlands along ridges and upper slopes, with rock outcrops and patches of talus scattered throughout. In general, soils are shallow with exposed bedrock, although woodland occurrences rely on somewhat deeper soils. In all cases, growing conditions are extreme.

The structure of this system is controlled by a combination of periodic fire and severe drought. Based on the SVE, the vertical structure needed to support good/very good conditions is open glade/woodland maintained by fire and other naturally limiting factors. Overall SVE condition score of 3.0 ("Good") for the novaculite glade and woodland declined from 2005 to 2.0 ("Fair") for the 2010 value due to very few growing season burns.

Central Interior Highlands Dry Acidic Glades and Barrens

This Central Interior Highlands Dry Acidic Glades and Barrens system (5,908 acres) is found in the Interior Highlands of the Ozark, Ouachita, and Interior Low Plateau regions, occurring along moderate to steep slopes or valley walls of rivers along most aspects. Grasses dominate this system, with stunted oak species and shrub species occurring on variable depth soils. This system is influenced by drought and infrequent to occasional fires. The vertical structure needed to support good/very good conditions is an open glade condition maintained by prescribed fire. Although this system was treated with growing season burns, the total percentage being burned every 5-10 year declined slightly, influencing a slight decline in the overall condition score.

Central Interior Acidic Cliff and Talus

This system is found primarily in the Interior (Ozark-Ouachita) Highlands and Interior Low Plateau ecoregions (4,755 acres). Sandstone outcrops and talus ranging from moist to dry typify this system, which is usually sparsely vegetated; however, on sites with more water and more soil, several fern species and sedges (*Carex* spp.) may become established. Wind, fire, and water erosion are the major forces influencing this system. The vertical structure needed to support good/very good conditions is an open, fire-maintained, herbaceous-dominated system with sparse woody vegetation. This community type would benefit from growing season burns.

Southern Arkansas Calcareous Prairie

This Calcareous Prairie system on the Ouachita NF is very small in size at 277 acres and includes natural grassland vegetation and associated woody vegetation in a relatively small natural region of the Upper West Gulf Coastal Plain of Oklahoma. Although other calcareous prairies are found west of the Mississippi River, this system, though small as a percentage of the Ouachita NF, represents some of the largest contiguos and highest quality of remaining examples. The vertical structure needed to support good/very good conditions is an open, fire-maintained grassland with sparse to absent woody vegetation. Overall condition score for Calcareous Prairie community has improved in the last five years.

MA 14 – Ouachita Mountains and MA 15 – West Gulf Coastal Plain (Habitat Diversity Emphasis)

For additional information, contact Betty Crump at (501) 321-5202

Management Area (MA) 14, Ouachita Mountains-Habitat Diversity Emphasis and Management Area 15, West Gulf Coastal Plain-Habitat Diversity Emphasis comprise over 42 percent of the Ouachita NF and 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 also described above and each of which also occurs in other MAs, are Ouachita Pine-Oak Forest; Ouachita Pine-Oak Woodland; and Ouachita Dry-Mesic Oak Forest. This 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, described above. Throughout all the communities, there is a need to create additional early seral vertical structure for wildlife habitat and forest health purposes.

MA 21 – Old Growth Restoration (Pine Grass Emphasis)

For additional information, contact Betty Crump at (501) 321-5202

Restoration of pine-grass old growth forests and woodlands fills a missing component (an ecological gap) among existing communities of the Ouachita Mountains, created largely by decades of fire suppression and large-scale logging in the decades between 1920 and 1940. Pine-grass old growth systems will 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. Frequent fire is essential to maintain habitat in this community type.

MA 22 – Renewal of the Shortleaf Pine/Blue Stem Grass Ecosystem and RCW Habitat

For additional information, contact Betty Crump at (501) 321-5202

The Ouachita Shortleaf Pine- Bluestem Woodland is a component of Ouachita Shortleaf Pine-Oak Forest and Woodland, also a part of the pine-dominated upland communities. Within the last five years, acres in this community type have increased and the condition score has improved from Fair to Good. This community provides valuable habitat for the Red-cockaded Woodpecker, an endangered species and is subject to intensive management, especially treatment with prescribed fire.

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 on a five-year average 53 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 converted to shortleaf pine by FY.

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

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	5-Yr Average
Acres Sold by Clearcut	**74**	**0**	**193**	**0**	**152**	**39**	**29**	**253***	**95**

Source: TIM

These treatments occurred in MA 14 (133 acres); MA 17 (46 acres); and MA 22 (74 Acres)

Collaborative Forest Landscape Restoration Program

Congress established the Collaborative Forest Landscape Restoration Program (CFLRP) with Title IV of the Omnibus Public Land Management Act of 2009 (PDF, 40 KB). The purpose of the Collaborative Forest Landscape Restoration Program is to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes.

The CFLRP funding in FY 2012 and FY 2013, provided accelerated landscape restoration for the Shortleaf Pine Bluestem Grass ecosystem on the Ouachita NF primarily through increased

collaborative accomplishments in prescribed burning, commercial timber harvests/thinnings, wildlife stand improvement (WSI), timber stand improvement (TSI), etc. Collaborating partners include: Arkansas Forestry Commission, The Nature Conservancy, Oklahoma Department of Wildlife Conservation, Arkansas Game & Fish Commission, Natural Resources Conservation Service, Arkansas Natural Heritage Commission, National Wild Turkey Federation, Arkansas Wildlife Federation, Audubon Arkansas, Arkansas State University, Oklahoma State University, University of Arkansas-Monticello, National Park, Monarch Joint Venture, the Monarch Watch, 12 schools and others. This project is designed to advance the 20-year ongoing and extensive efforts to restore large blocks of contiguous public lands into shortleaf pine-bluestem habitat. The dense second-growth forests long protected from fire need to be thinned and burned periodically to restore open, species-rich woodlands. Restored pine-bluestem woodlands provide habitat for a suite of rare, endangered, and/or sensitive species that thrive only or primarily under such conditions. Fire-influenced (pine-grass) old growth forests and woodlands are rare on the landscape and represent a significant restoration need. Maintenance of shortleaf pine-bluestem systems requires periodic thinning, frequent prescribed burns, and occasional regeneration treatments.

The Ouachita NF is the only participant in the National CFLR program that is incorporating conservation education into the CFLRP efforts. Forest specialists and partners are working with local schools to create video products to inform the publics on the 'how to and why, as well as the benefits of restoration work; on federally endangered red-cockaded woodpecker habitat restoration; on the tools of management-timber and prescribed fire; and the environmental education aspects of the Monarch Watch milkweed projects. For more specific targets and accomplishments for the CFLRP on the Forest, the following link provides the annual reports for 2012 and 2013: http://www.fs.fed.us/restoration/CFLRP/results.shtml

Terrestrial Habitat and Health

Soils

For additional information, contact Jeff Olson at (501) 321-5202

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. In each of Fiscal Years 2012 and 2013, the objective of conducting 40 acres per year has been exceeded.

Soil Restoration and Maintenance Activities are implemented on small projects as a part of watershed improvement on the Ouachita NF. These include such activities as rehabilitating abandoned roads, trails and mines, gully stabilization, and stream channel and riparian restoration. 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
Acres of Soil Restoration and Maintenance	**87**	**45**	**41**	**75**	**64**	**118**	**505**	**1003**

Beginning with this FY 2012 - FY 2013 Monitoring and Evaluation Report, Burned Area Emergency Response Activities and monitoring for National Best Management Practices for Water Quality Management will be included in biennial reports.

Burned Area Emergency Response (BAER) is a part of soil and water resource assessment, rehabilitation and monitoring work on the Ouachita NF. BAER focuses on natural resource damage occurring as a result of wildfire.

National Best Management Practices for Water Quality Management is a required part of resource monitoring programs on National Forest lands, beginning in Fiscal Year 2013. This was the first of two transitional years which mandated that BMPs within two resource categories be monitored on each National Forest. On the Ouachita NF, those BMP categories monitored were roads and fire. With 2013 being the first year for this type of monitoring, it will be several years before results and effectiveness will be evident.

The following tabulation displays acres of accomplishment by year for the new monitoring categories listed above:

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

Acres	2012	2013
Soil & Water Resource Assessment (BAER)	685	1177
National BMP Monitoring	0	687

Soil Restoration and Maintenance Trends Related to Forest Plan Objectives and/or Desired Conditions

The desired condition of Terrestrial, Riparian, and Aquatic Ecosystems on the Ouachita NF is, in great part, dependent upon the health of the soil resources. Each year soil monitoring is conducted to ensure that Forest Plan standards for maintaining soil quality are being met. Factors such as soil compaction and soil erosion are a threat to sustained soil productivity as well as to 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 have not had an overall detrimental impact to soil conditions. There are no changes recommended to ONF soils standards.

Fire Influences and Fuels

For additional information, contact Andy Dyer at (501) 321-5202.

Fire regime includes how frequently fires occur and the season of the burn (dormant or growing season). 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.

There are two forest-wide standards that guide fire suppression actions on the Ouachita NF. These standards coupled with the Fire Management Plan guide the fire management program for the Ouachita NF 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. The majority of wildland fires are human-caused and burn an average of less than 100 acres per fire (calculated adding average acres/fire/year and dividing by total years). Lightning activity as a source of fire ignitions plays an important but usually small role in fire cause; however, FY 2011 was a highly active year for lightning ignited fires.

Fire Activity by FY 2006 – 2011, ONF

Objective or Activity	Unit of Measure	FISCAL YEAR							
		2006	2007	2008	2009	2010	2011	2012	2013
Wildland Fire	Number of Fires	187	68	41	60	75	130	43	22
Wildland Fire	Acres	23,185	14,347	460	2,247	2,029	7,720	1795.4	3305.3
Wildland Fire	Average Acres/ Fire	124	211	11	37	27	59	42	150
Lightning caused	Number of Fires	46	20	4	7	12	68	10	10

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 three types. Under today's fire management terminology; the three have been reduced into the two categories below:

1. 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. Less than full suppression Fires – Formerly a third category, this is now included under the wildfire category and if ignitions are ignited from a natural source it may be managed to achieve resource benefit objectives
2. Prescribed Fires – Planned ignitions to achieve resource goals, objectives, and benefits

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 two 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 proven difficult to achieve. Efforts are made to utilize all opportunities to increase treatments. Partnering with state agencies, non-governmental organizations, and private land owners 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. The following tabulation reports by purpose prescribed fire activity (including wildland fire acres) for FY 2006 through FY 2013.

Prescribed Fire Program by Purpose (acres) by FY, ONF					
Fiscal 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**	**1795.4**	**101,529**
2013	**79,086**	**11,554**	**2,220**	**3305.3**	**95,165**

Under Watershed Restoration and Enhancement Agreement Authority, popularly known as the Wyden Amendment, the Forest Service is permanently authorized to enter into domestic cooperative agreements or grants with willing participants for the protection, restoration, and enhancement of fish and wildlife habitat and other resources on public or private land and for the reduction of risk from natural disaster where public safety is threatened that benefit these resources within the watershed. While the number of acres treated through prescribed burning utilizing the Wyden Amendment is not large, these acres critically influence the Forest's ability to conduct prescribed fire projects safely and efficiently. Ability to include the lands of willing partners allows for landscape treatment projects and projects that go beyond lands within the National Forest System. Typically, lands burned though the agreements are small tracts of an in-holding or an adjacent parcel that aid in designing the project to take advantage of natural or pre-existing features for control lines. The tabulation below shows acres treated with prescribed fire under agreement.

Acres of Prescribed Fire accomplished under Agreement by FY, ONF

Activity In Acres	FISCAL YEAR							
	2006	2007	2008	2009	2010	2011	2012	2013
Prescribed Fire Agreements	>4,000	>9,000	2,563	>3,000	2,728	1,394	0	2,480

Prescribed fire is one of the most important actions that the Forest implements to manage against catastrophic wildfires as well as to improve and promote forest and vegetation community health. Prescribed fire is consistently used to aid in the prevention of wildfires, and is essential for forest health. The forest is comprised of primarily fire-dependent communities, particularly the pine-dominated communities, and is dependent on a definite and somewhat frequent fire regime for forest health. As shown in the following tabulation, the annual prescribed fire acres burned by community for FY 2012 and 2013 were improved from FY 2011.

Community Type Treated with Prescribed Fire, ONF, by FY

	Pine Oak Forest		Pine Oak Woodland		SLP Bluestem		Dry-Mesic Hardwood	
Annual Desired Range	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%
FY 2006	29,568	4%	8,235	3%	7,717	5%	11,196	5%
FY 2007	46,238	6%	15,412	6%	51,617	26%	12,736	6%
FY 2008	59,702	6%	9,764	6%	30,000	14%	15,324	5%
FY 2009	46,405	5%	15,469	10%	37,105	19%	19,799	7%
FY 2010	47,812	7%	21,478	8%	32,551	18%	25,633	8%
FY 2011	26,446	4%	11,163	4%	19,489	11%	9,854	3%
FY 2012	61,099	8%	20,962	7%	25,102	14%	16,063	5%
FY 2013	61,094	8%	19,170	6%	23,198	13%	15,597	5%

The Forest Plan recognizes the importance of prescribed fire mimicking the role that wildfire played in the development of the fire-dependent ecosystems of the Ouachita NF and established a goal of reintroducing fire onto the landscape. Prescribed fires conducted during the growing season, generally described as 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 for species viability (SVE) counted fires March through September as growing season. For compatibility with the SVE analysis, prescribed fire accomplished from March through September annually are reported here. Implementing prescribed fire 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, by FY

March – September Growing Season	FISCAL YEAR							
	2006	2007	2008	2009	2010	2011	2012	2013
Acres of Prescribed Fire	18,162	17,327	92,614	57,102	112,957	83,925	82,254	86,753

All wildland fires have the potential to pose a threat 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 of fuels 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.

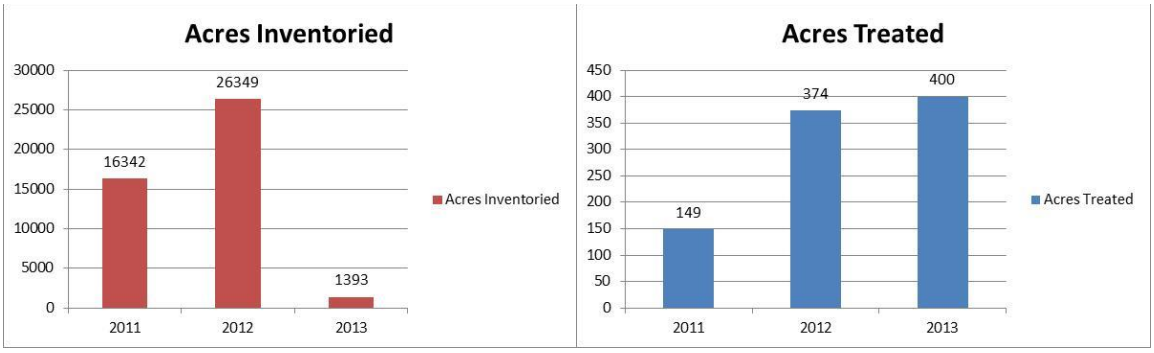
Terrestrial Non-native Invasive Species

For additional information, contact Susan Hooks at (501) 321-5202

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 has been collecting data on invasive species infestations and entering that data into the Natural Resource Information System (NRIS) corporate database. There have been NNIS inventories completed on Dry Creek, Poteau Mountain, Blackfork, and Flatside wilderness areas. The Ouachita NF continually enters new information on non-native species infestations into NRIS as watershed assessments are completed. There have been 35,466 acres of wilderness inventory completed on four of the six wildernesses. The most common invasive species is S*ericea lespedeza*. Infestations appear to be limited to roads and trails. There have been no treatments of non-native invasive species in any of the wildernesses as required prerequisite work (NEPA) has not been completed.

The Forest treats acres for non-native invasive species and also surveys areas and locates new sites that need treatment. In 2012 and 2013 there was a total of 774 acres of non-native invasive plant treated and a total of 27,742 acres inventoried (new infestations). The total number of acres has risen slightly each year. Acres inventoried are determinate on locating new infestations and some areas surveyed do not have invasive species therefore this number will vary more from year to year.



Insects and Disease

For additional information, contact Dr. James D. Smith at (318) 473-7056

The Ouachita NF continues to participate in the annual southern pine beetle (SPB) trapping scheme that attracts the SPB and forecasts activity based on the number of trap catches. The Ouachita NF also participates in 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 Ouachita NF currently is dealing with the invasive "emerald ash borer". This beetle has rapidly moved from its entrance point into the United States (Michigan) to Arkansas. Six counties in south central Arkansas have had positive trap catches and those counties plus other buffer counties have now been quarantined for the movement of hardwood timber products. This particularly affects the Ouachita NF in that firewood permitees 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 to adjacent counties. The Ouachita NF has been active in notifying the public of the destructive and invasive nature of this pest for the past four years.

Other invasive species have been found just south of the Arkansas state line in Louisiana. The red bay wilt which is vectored by a bark beetle has been found within eight miles of the Arkansas state line. This insect/disease combination has moved quickly since first being diagnosed on the east coast. At risk are red bay trees and sassafras trees within the forest. Trapping and surveying for the insect and the disease is continuing.

Oak decline is still being found in Arkansas. This problem occurs on poor sites with high volume and age component present. The most damaging incidence of this disease has been found on the Ozark NF near Clarksville, Arkansas. There are isolated areas within the Ouachita NF that also host this disease complex. These areas will be aggressively treated as they are found and the disease component confirmed. Due to potential impacts from the red oak borer, thinning and cultural management of hardwood stands is needed. Such treatment will ultimately lead to a healthier, more resilient, and more productive forest.

Other Vegetation Management

Forest Regeneration

For additional information, contact Jo Ann Smith at (501) 321-5202

The Ouachita NF predominately uses natural regeneration to propagate stands and provide early seral vegetation. Seedtree and shelterwood cuts in Shortleaf pine/Shortleaf pine-Oak planned and contracted through commercial timber sales between 2005 -2013 resulted in 18,257 acres of regeneration. Additionally, uneven age harvests occurred on 11,210 acres, resulting in approximately one-seventh of those acres (1,601 acres) in regeneration. Natural regeneration systems are very successful, with less than 10 percent of the area in need of supplemental planting.

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) are removed through clearcut to restore shortleaf pine and on cut-over acquired lands. At the time of the Five-year review, 7,309 acres had been planted in shortleaf pine.

The Ouachita NF has had moderate-to-good success in planting shortleaf pine in the past. Also, 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 has an increase in growth rates and partial elimination of release treatments.

Monitoring will continue on these plantations for any signs of "toppling," a condition observed by Forest Research on containerized longleaf plantations where saplings are more easily downed in strong winds.

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.

Forest Regeneration Trends

For additional information, contact Jo Ann Smith at (501) 321-5202

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 change. This trend affects the priorities and objectives of the plan including: OBJ06, OBJ08, OBJ09, OBJ10 and OBJ11.

Acres Harvested by Method of Cut, FY 2006 – FY 2013, ONF

Harvest Type	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Clearcut	74	0	193	134	152	39	29	253
Even-Aged Management (Seedtree/Shelterwood)	2,602	3,414	3,186	2,351	2,086	1,142 (150/992)	2,322 (2,067/255)	1,151 (855/296)
Uneven-Age Management (Group/Single Tree)	3,216	1,325	1,246	1,568	1,336	856 (856/0)	684 (217/467)	979 (882/97)
Commercial Thinning	13,046	10,601	10,981	10,409	8,120	6,175	10,517	8,058

Available stumpage for KV Funds drops sharply when specified road construction or reconstruction is required. The Forest is experiencing a downward trend in KV dollars available for wildlife, fisheries, invasive species, and erosion control projects.

Terrestrial Habitats and Conditions

For additional information, contact Betty Crump at (501) 321-5202 or Mary Lane at (501) 321-5202

Vertical Structure

Fire, thinning, and other vegetation management practices help sustain the balance of structural and compositional diversity needed to support healthy populations of native plants and animals while maintaining the productivity of the land. 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, many other bird and small mammal (rodents) species, and reptiles such as terrapins and snakes seeking small mammals as food sources.

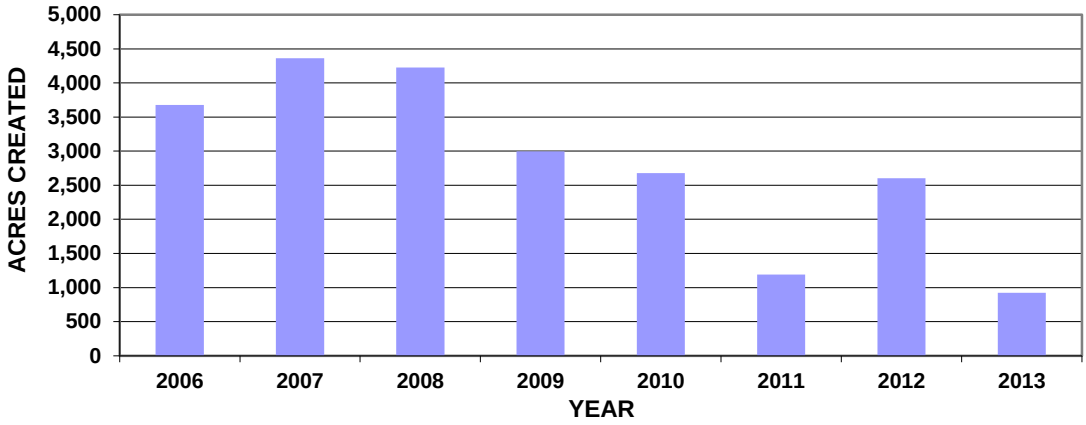
- Early seral includes the 0-5 year-old grass/forb stage plus the 0-10 year-old seedling/sapling/shrub stage. (In Woodland communities, early seral structure also includes 40 percent of the late seral stage.)
- Mid-seral structure includes all age-classes and diameters in the pole timber stand condition class
- Late seral 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

Early seral stage is important for the viability of early seral-dependent species as well as to development of a healthy and resilient forest. The early seral stage is particularly important to species such as white-tailed deer, Northern Bobwhite, Prairie Warbler, many other bird and small mammal (rodents) species, and reptiles such as terrapins and snakes seeking small mammals as food sources. The grass/forb seedling/sapling (early seral) condition is highly productive in terms of diversity and abundance of nesting and escape cover and forage production, including insects, small mammals, reptiles, seeds and soft mast.

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 2005, p. 175.) The 2005 Forest Plan objective is to create 5,500 acres of early seral stage (grass/forb) habitat per year using even-aged methods. The Forest is lagging behind Forest Plan Objective 006, "*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."* The graph below shows the Forest has failed to meet that objective since 2006.

EARLY SERAL HABITAT CREATED



Inadequate levels of early seral stage habitat creation result in reduction of early seral species numbers. Forest-wide, less than 23,000 acres of early seral habitat have been created since Plan Revision in 2005, averaging less than 3,000 acres per year. In FY 2012 and 2013, 110 and 391 acres, respectively, were salvaged; however, adding this to the acres of early seral created through green timber harvesting (2,605 and 925) would still not meet the plan objective. The following tabulation presents acres of early seral stage habitat created by timber harvesting since 2000 which included accomplishments under the previous Forest Plan as well as the 2005 Forest Plan.

Acres of Early Seral Stage Habitat Created by Timber Harvesting Since 2000

1990 Forest Plan		2005 Forest Plan	
Fiscal Year	Acres of Early Seral Habitat Created	Fiscal Year	Acres of Early Seral Habitat Created
2000	2,246	2006	2,602
2001	953	2007	4,363
2002	772	2008	3,869
2003	2,268	2009	2,151
2004	1,866	2010	2,676
2005	3,031	2011	1,190
N/A	N/A	2012	2,605
N/A	N/A	2013	925

The early seral condition has a transient 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 these age classes. This will ultimately result in a forest well over the desired rotation age and 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 an 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.

Mid-Seral Stage

The Mid-Seral Stage 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.

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

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Mature Pine Forest (Acres)	435,112	565,683	495,176	507,068	553,923	588,733	568,851	565,235	581,925
Change from Previous Year (Acres & %)	N/A	+130,600 + 30	-73,500 - 12	+11,892 + 2	+46,855 +9	+34,810 +6	-19,882 -3	-3,616 -1	+16,690 +3
Change from 2005 (Acres & %)	N/A	+130,600 + 30	+ 60,100 + 14	+71,956 +14	+118,811 +27	+153,621 +35	+133,739 +31	+130,123 +30	+146,813 +34

Other Terrestrial Habitat Components – Wildlife

For additional information, contact Mary Lane at (501) 321-5202

In addition to the terrestrial ecosystems and the habitat they provide (discussed under Terrestrial Habitats and Conditions above) other terrestrial habitat systems provide habitat that is important specifically for wildlife. Habitat components monitored annually include Cave and Mine Habitat and Mast Production. Other habitat components that are important to terrestrial ecosystems include Large Trees near Water; Snags, Cavity/Den Trees, Down Logs/Woody Debris; and Old Growth Habitat. A short discussion of Cave and Mine Habitat and Mast Production is included below.

Cave and Mine Habitat

For additional information, contact Mary Lane at (501) 321-5202

Bear Den Cave Monitoring: During the 2012 survey, at least 5 Indiana bats were identified in Bear Den Cave. There were no bat surveys conducted at Bear Den Cave in FY 2013. Surveys in 2010 at Bear Den Cave found 25 Indiana bats. No other proposed, endangered, threatened, or sensitive bat species where found in any of the 2012 or 2013 cave and mine surveys on the Ouachita NF.

A protective order for closure at Bear Den Cave has been in place for many years to protect the cave and the Indiana bat hibernaculum. In May 2013, the Southern Region enacted a regional closure order for caves and mines across the South, extending the protection against the spread of white-nose syndrome.

Bear Den Cave Closure
Source: USFS

Mast Production

For additional information, contact Mary Lane at (501) 321-5202

Hard mast (acorns and hickory nuts) is an important habitat element 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.

Hardwoods greater than 50 years old are used to determine hard mast capability. There were 423,961 acres of hardwoods greater than 50 years old in FY 2012 and 2013. Management activities critical to mast producing tree species and predominately hardwood communities are thinning and prescribed burning.

Acres of Mast Capability by Year on the ONF

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Mast Capability (Acres)	**433,250**	**468,172**	**474,384**	**452,111**	**454,787**	**394,357**	**422,992**	**423,961**	**423,961**
Change from Previous Year (Acres and %)	**N/A**	**+35,000 + 8**	**+>6,000 + 1**	**- 22,273 - 5**	**+2,676 +1**	**-60,430 -13**	**+28,635 +7**	**+969 0**	**0 0**
Change from 2005 (Acres and %)	**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**

Hardwoods greater than 100 years old are used as a surrogate for mature hardwood forests. In FY 2012 and 2013, there were 70,343 acres of hardwood forest greater than 100 years old (3.9% percent of the Forest) compared to 73,830 acres greater than 100 years old in FY 2010. In FY 2011, there were 75,743 acres of hardwood forest greater than 100 years old (4.2% percent of the Forest). This is a decrease of 5,400 acres over the previous year. When compared to FY 2005 acres of mature hardwood forest and mature pine forest, this indicates that the Ouachita NF is slowly becoming an older forest.

Acres of Mature Hardwood Forest by Year on the ONF

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Mature Hardwood Forest (Acres)	**50,959**	**51,873**	**130,343***	**52,553**	**58,689**	**73,830**	**75,743**	**70,343**	**70,343**
Change from Previous Year (Acres and %)	**N/A**	**+>900 + 2**	**+78,500 + 251**	**-77,790 - 59**	**+6,136 +12**	**+15,141 +26**	**+1,913 +3**	**-5,400 -7**	**0 0**
Change from 2005 (Acres and %)	**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**

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

Habitat Capability Modeling

For additional information, contact Mary Lane at (501) 321-5202

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. Estimated suitable habitat acres for MIS are shown for FY 2005, current habitat capability for FY 2012 and FY 2013 and projected capability for FY 2015.

Forest-wide habitat capability modeling shows that terrestrial MIS species are moving toward or have passed the projected desired habitat capability for FY 2015, with a few exceptions. Habitat for such early successional species as Northern Bobwhite declined in 2012 and 2013 from the previous years. Habitat capability for Prairie Warbler has been declining since 2007, although it has appeared to be stable with some increase the last 2 years, it continues to be well below the habitat capability estimated in the 2005 Plan. Habitat for such late successional species as Pileated Woodpecker remains above levels projected for 2015. Habitat capability for Scarlet Tanager has steadily declined to below the 2015 projected level, although it remained fairly stable for the last 4 years. This is an indication that the Ouachita NF is becoming a late seral forest, in need of additional regeneration, thinning, prescribed burning, and other habitat improvement to meet desired conditions.

Terrestrial Management Indicator Species	Estimated Habitat Capability FY 2005	Habitat Capability FY 2006	Habitat Capability FY 2007	Habitat Capability FY 2008	Habitat Capability FY 2009	Habitat Capability FY 2010	Habitat Capability FY 2011	Habitat Capability FY 2012	Habitat Capability FY 2013	Projected Desired Habitat Capability FY 2015
Eastern Wild Turkey	18,461	17,601	18,316	18,370	16,204	14,610	14,736	14,643	14,727	9,177
Northern Bobwhite	65,002	62,571	69,349	74,223	68,888	76,690	71,468	67,296	63,004	101,748
Pileated Woodpecker	17,842	17,371	14,647	15,555	13,628	11,580	12,814	12,731	12,597	11,265
Prairie Warbler	90,313	85,691	93,830	87,788	71,582	75,531	64,686	65,411	66,126	112,590
Scarlet Tanager	90,583	86,455	85,046	84,040	73,136	66,744	66,743	66,811	66,573	69,500
White-tailed Deer	58,395	50,840	51,898	50,325	42,442	41,775	40,223	37,814	38,415	38,105

Terrestrial Management Indicator Species and Wildlife Habitat Management

For additional information, contact Mary Lane at (501) 321-5202

Management indicator species (MIS) are analyzed separately from the threatened and endangered species and the sensitive and other species of viability concern. National Forest Management Act regulations adopted in 1982 require selection of MIS during development of forest plans (36 CFR 219.19(a)). Management indicator species (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.

Maintenance and improvement of habitat for MIS are addressed by objectives, standards, and Management Area allocations; however specific information for each of the species is collected and reported here.

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. The Forest Plan identified 7 terrestrial MIS—all are bird species with the exception of white-tailed deer. The Red-cockaded Woodpecker was included as both a federally endangered Species and an MIS. The MIS are monitored to determine if changes in the species indicate the effects of management activities. The tabulation that follows shows the 24 MIS for the Ouachita NF under the 2005 Forest Plan.

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	***Colinus virginianus***	**Pirate Perch***	***Aphredoderus sayanus***
Pileated Woodpecker	***Dendroica discolor***	**Central 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 - 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 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.

In this report, terrestrial MIS and aquatic MIS are presented separately. Terrestrial MIS are discussed below.

Eastern Wild Turkey *(Meleagris gallapavo)*

For additional information, contact Mary Lane at (501) 321-5202.

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

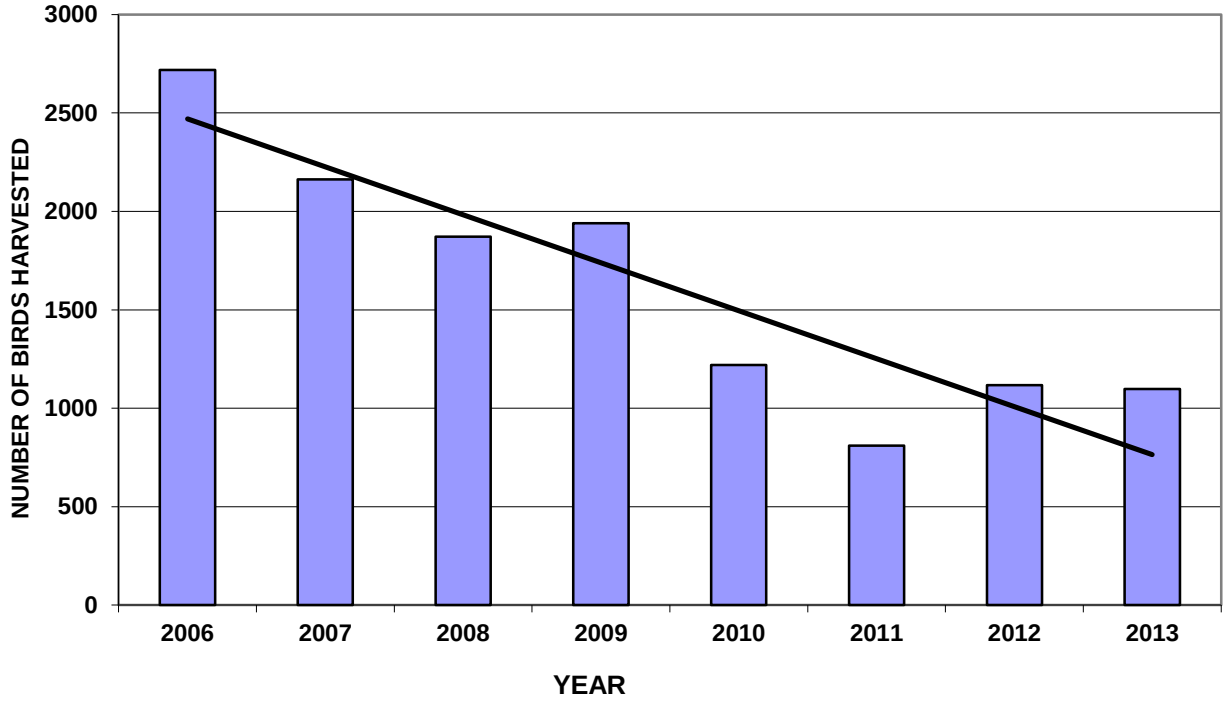
Data Sources: Sources of data include turkey poult surveys, spring turkey harvest data, habitat capability modeling using CompPATS and Landbird Points survey data. In the 2005 Forest Plan, the minimum population objective is 3.3 turkeys per square mile (9,177 turkeys Forest-wide) after 10 years and 3.9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

Eastern Wild Turkey
Source: USFS

Population Trends for Eastern Wild Turkey: The number of turkey poults per hen has varied from 1.99 in 2006 to 3.2 poults per hen in 2012 and 2.5 in 2013 in the Ouachita region of Arkansas. Although this indicates that reproduction has gone down in 2013 from 2012 it is still better than what has been seen in the last decade.

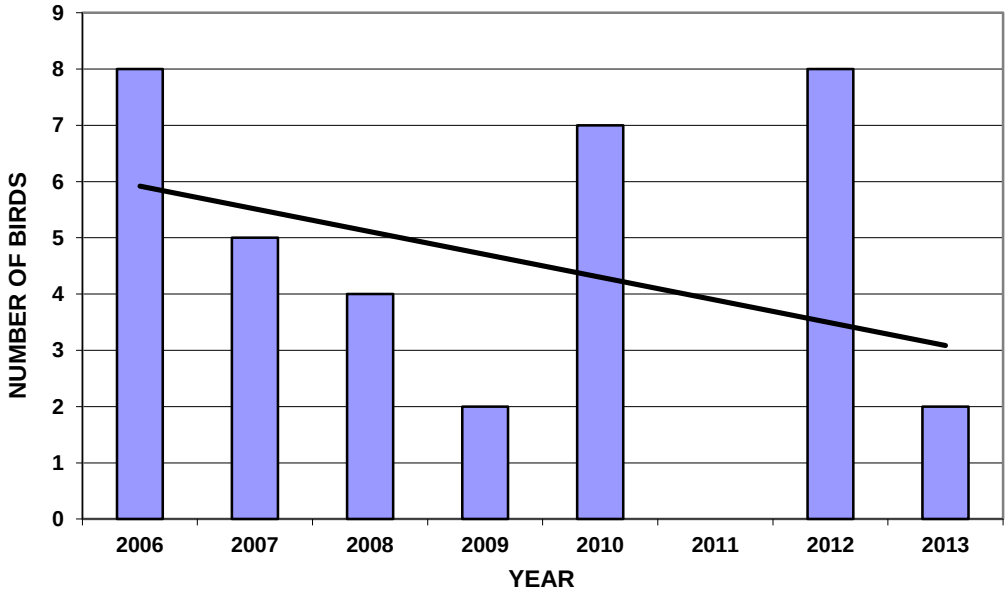
Spring turkey harvest achieved a high of about 2,718 birds in FY 2006. Spring 2012 harvest in the Ouachita Mountains was a 28 percent increase from spring 2011 and a 25 percent increase statewide from previous year while spring 2011 harvest was 50% less than the 2010 harvest. Spring 2013 harvest in the Ouachita Mountains was a 2 percent reduction from spring 2012 and a 2 percent reduction statewide from previous year. The Arkansas Game and Fish Commission addressed the turkey decline by adjusting the hunting season and eliminating the fall season entirely.

OUACHITA SPRING TURKEY HARVEST

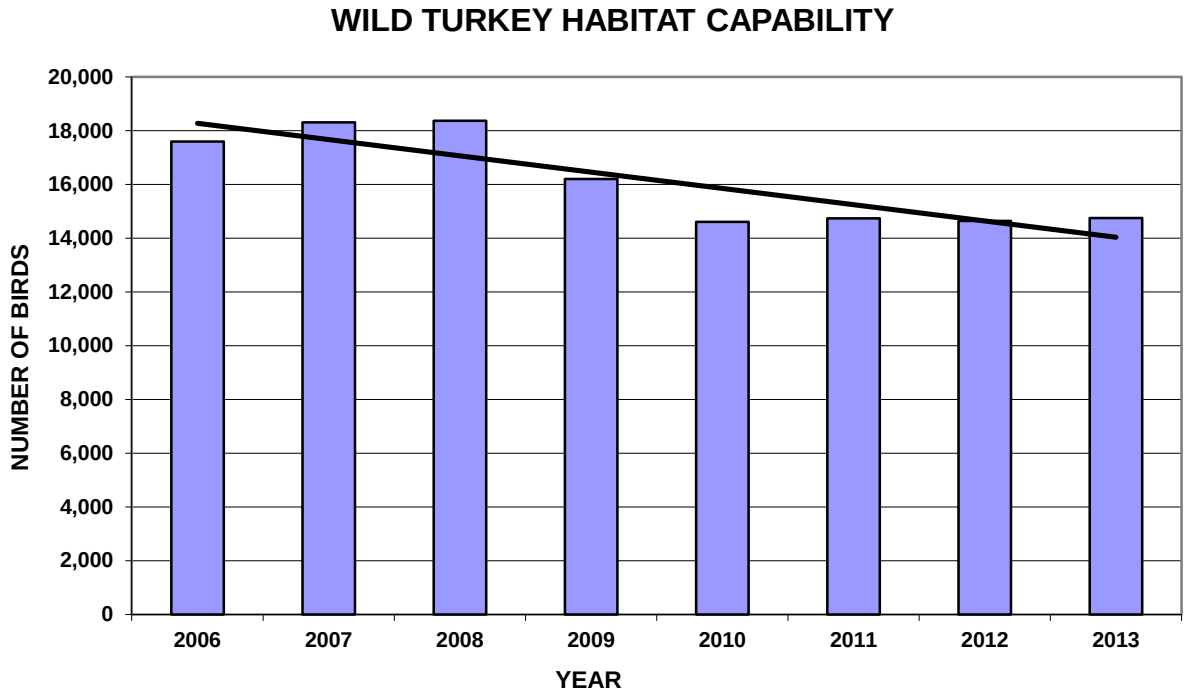


Landbird Points surveys are conducted on many acres within the Ouachita NF. No turkeys were detected during the 2011 surveys. During the surveys in 2012, 8 birds were identified, and only 2 birds were identified in 2013, resulting in a continued downward trend. The Eastern Wild Turkey trend detected on the Ouachita NF Landbird Points surveys is similar to the drop in harvested birds.

WILD TURKEY LANDBIRD POINTS DATA



Habitat capability for FY 2012 and 2013, respectively, is estimated at 14,643 and 14,748 turkeys compared to an estimated 14,736 turkeys in 2011, 14,610 in FY 2010, 16,204 in FY 2009, 18,370 in FY 2008, and 18,316 in FY 2007, showing a downward trend in habitat capability for the years FY 2006 to FY 2013. Although the estimated habitat capability is exhibiting a downward trend, habitat capability has remained relatively stable during the last 4 years. However, 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 2005 Forest Plan.



Interpretation of Trends for Eastern Wild Turkey: A negative trend is suggested for the turkey population on the Forest based on habitat capability modeling. In addition, the drop in turkey harvest and birds detected on the Landbird Points data would indicate a reduction in the number of turkey forest-wide. Still, habitat capability remains above the level projected in the 2005 Forest Plan. The sustained high levels of habitat capability would indicate that the drop in harvest levels, reductions in poults per hen, and birds detected on the Landbird Points are due to factors other than habitat.

Implications for Management: Turkey poult production is both up and down the last 2 years, with harvest, birds detected on Landbird Points counts and habitat capability all showing a downward trend. Insufficient data exist to suggest that Eastern Wild Turkey may be in danger of losing population viability or falling below the 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, weather conditions and predation may be having a negative impact on the turkey. Data are contradictory, with habitat projections and poult production reflecting a negative, but stabilized trend in the past few years, but harvest, and Landbird Points counts trending downward. Due to conflicting indicators, additional data should be collected to determine if additional management changes are warranted. Research across

the South has shown that prescribed fire treatments, including the 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 two 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.

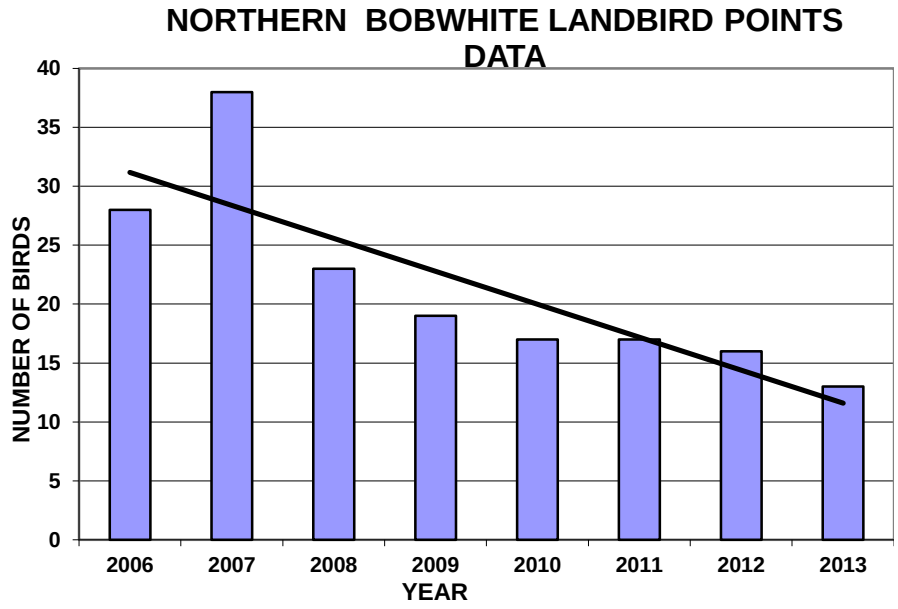
Northern Bobwhite (*Colinus virginianus*)

For additional information, contact Mary Lane at (501) 321-5202

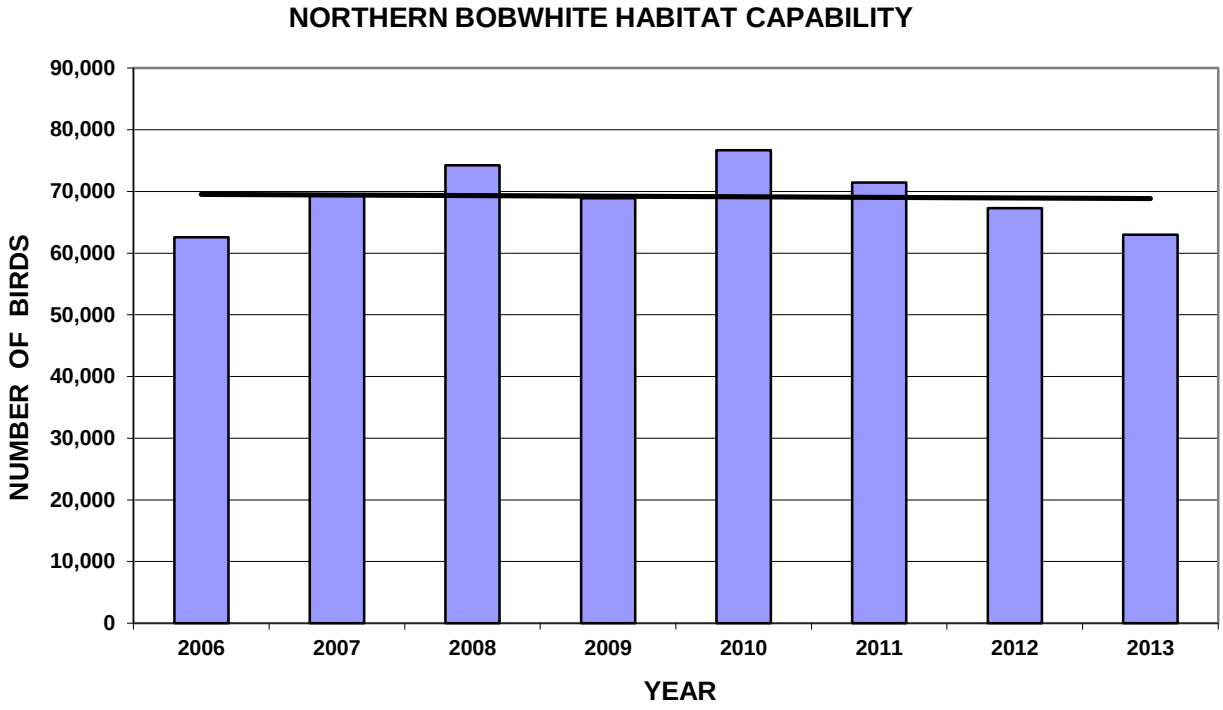
The Northern Bobwhite is an MIS for the Ouachita NF, selected to indicate the effects of management on meeting public hunting demand and the effects of management on the pine-oak woodland and pine bluestem communities (USDA Forest Service 2005a, p165.) Data Sources: Data sources and monitoring techniques for this species include Northern Bobwhite call counts (Arkansas Game and Fish Commission); the CompPATS Habitat Capability Model; and the Ouachita NF Landbird Points monitoring data collected from 1997 – 2013. In the 2005 Forest EIS, the population objective for the Northern Bobwhite is an average of 36.6 birds per square mile (USDA Forest Service 2005a, p166).

Northern Bobwhite
Source: USFS

Population Trends: Since FY 1997, the Ouachita NF has been conducting bird surveys on over 300 Landbird Points. Northern Bobwhite data indicate a downward trend in birds detected over this 14-year period. Since FY 2006, this declining trend has continued mirroring this species range-wide population trends.



Estimated habitat capability for the Northern Bobwhite has been relatively stable since FY 2006, with the last 3 years showing a slight decrease. However, it is still far from reaching the projected FY 2015 desired forest-wide habitat capability of 101,748 based on the 2005 Forest EIS. One major factor is that early seral habitat creation has never attained the 2005 Forest Plan objective of 5,500 acres per year.



Interpretation of Trends for Northern Bobwhite: Northern Bobwhite Landbird Points data indicate a decreasing trend in Northern Bobwhite numbers for the Ouachita NF, while the estimated habitat capability shows a stable trend. Regional declining population trends for the Ozark-Ouachita Plateau region are reported. 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 expected that these management actions will soon positively act to overcome the downward trends.

Implications for Management: The Northern Bobwhite population viability on the Ouachita NF is not expected to be threatened, and populations are expected to improve through 2005 Forest Plan implementation. Increases in thinning and prescribed fire, especially associated with some 200,000 acres of shortleaf pine-bluestem grass ecosystem restoration, will benefit Northern Bobwhite populations by improving habitat.

Pileated Woodpecker (*Dryocopus pileatus)*

For additional information, contact Mary Lane at (501) 321-5202

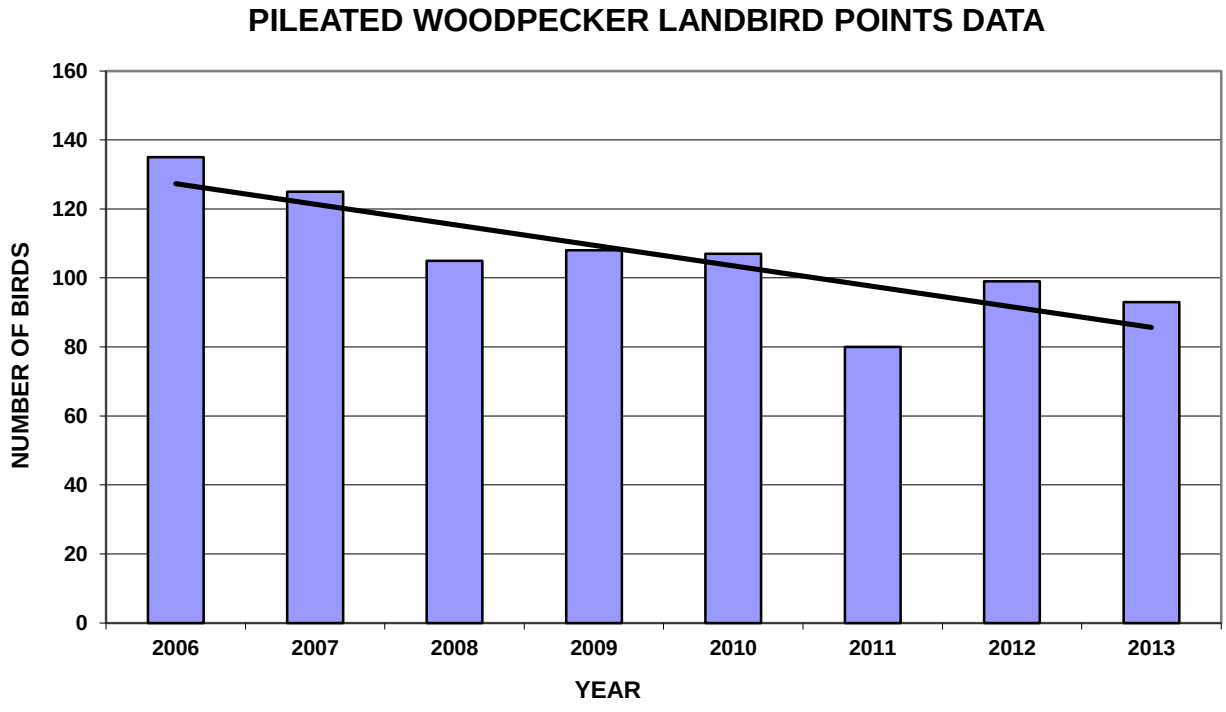
The Pileated Woodpecker is a management indicator species for the Ouachita NF, selected to indicate the effects of management on snags and snag-dependent species (USDA Forest Service 2005a, p166.) This species prefers dense, mature to over-mature hardwood and hardwood-pine forest types. It is a primary 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.

Data Sources: The Ouachita NF Landbird Points count data and habitat capability predictions using CompPATS wildlife model and Field Sampled Vegetation (FSVeg) data were used as data sources for evaluating Pileated Woodpecker population trends.

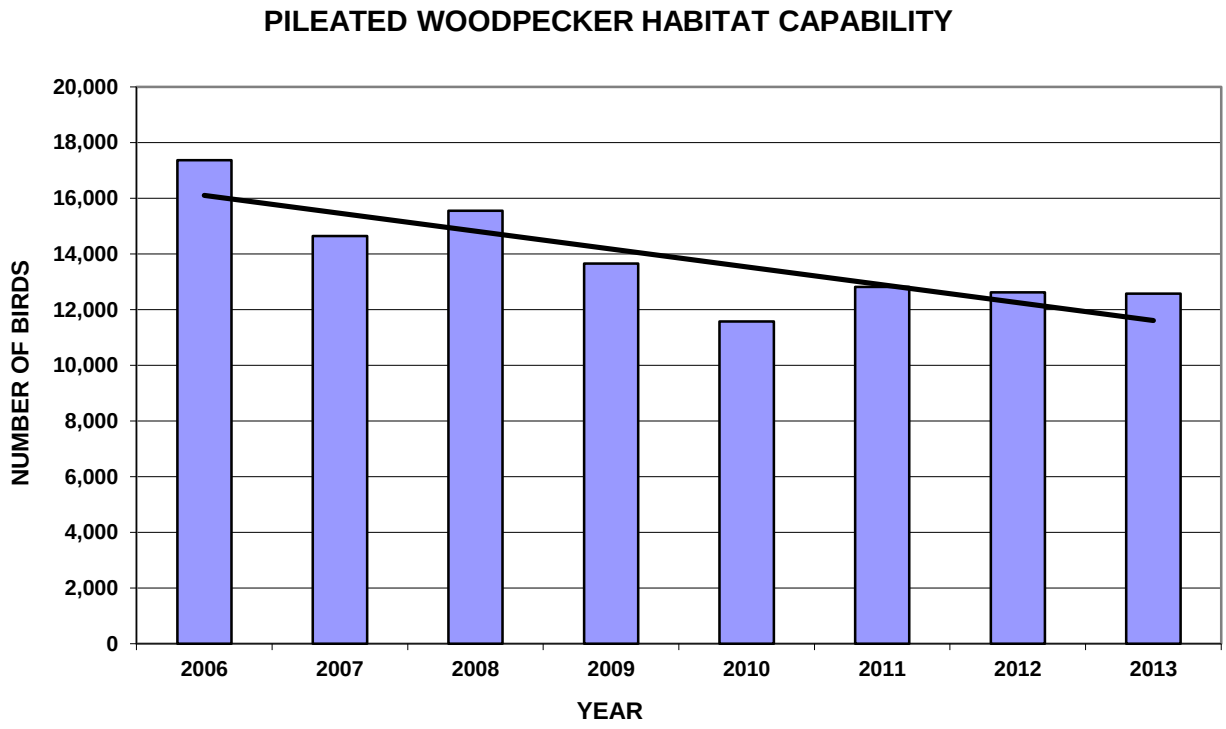
Population Trends: Ouachita NF Landbird Points data and habitat capability data both indicate a downward trend for the Pileated Woodpecker.

Pileated Woodpecker
Source: www.enature.com

Landbird Points monitoring data on the Ouachita NF indicate the long term trend to be slightly decreasing for Pileated Woodpecker; however this is not reflecting the fact that across the Ouachita NF the trend is for the forest to age overall.



The CompPATS wildlife model estimates for the habitat capability, using all forest types, indicate a more defined decreasing trend since FY 2006 than Landbird Points data. These CompPATS wildlife model data are for pine, pine-hardwood, hardwood, and hardwood-pine stands with the greatest value for stands greater than or equal to 41 years old. As these stands age, the habitat capability to support the Pileated Woodpecker should begin to stabilize.



Interpretation of Trends for the Pileated Woodpecker: The CompPATS wildlife model takes into account the conditions in all forest types, and it factors in management practices including prescribed fire and thinning. These data show a downward trend since FY 2006; however the data also indicate that the Forest is still well within the desired habitat capability projected for FY15. Overall population trends should continue to improve as the unmanaged hardwood and hardwood-pine and the managed pine stands age. The current habitat capability that is estimated to support approximately 12,800 birds exceeds the 2005 Forest Plan bird population objectives of 11,265 for FY 2015 (USDA Forest Service 2005a) but is trending towards the FY 2015 desired capability.

Implications for Management: 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 *(Dendroica discolor)*

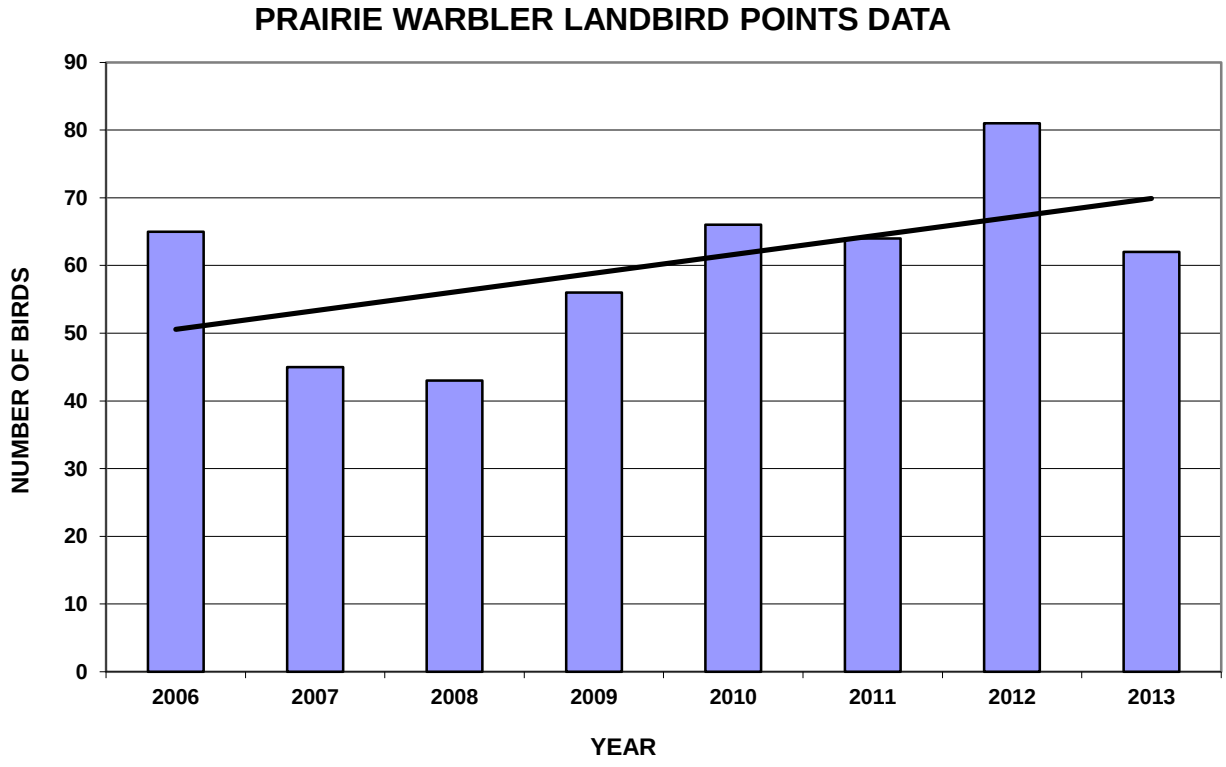
For additional information, contact Mary Lane at (501) 321-5202

The Prairie Warbler is an MIS on the Ouachita NF, 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 forest stands. The vegetation selected may be deciduous, conifer, or mixed types.

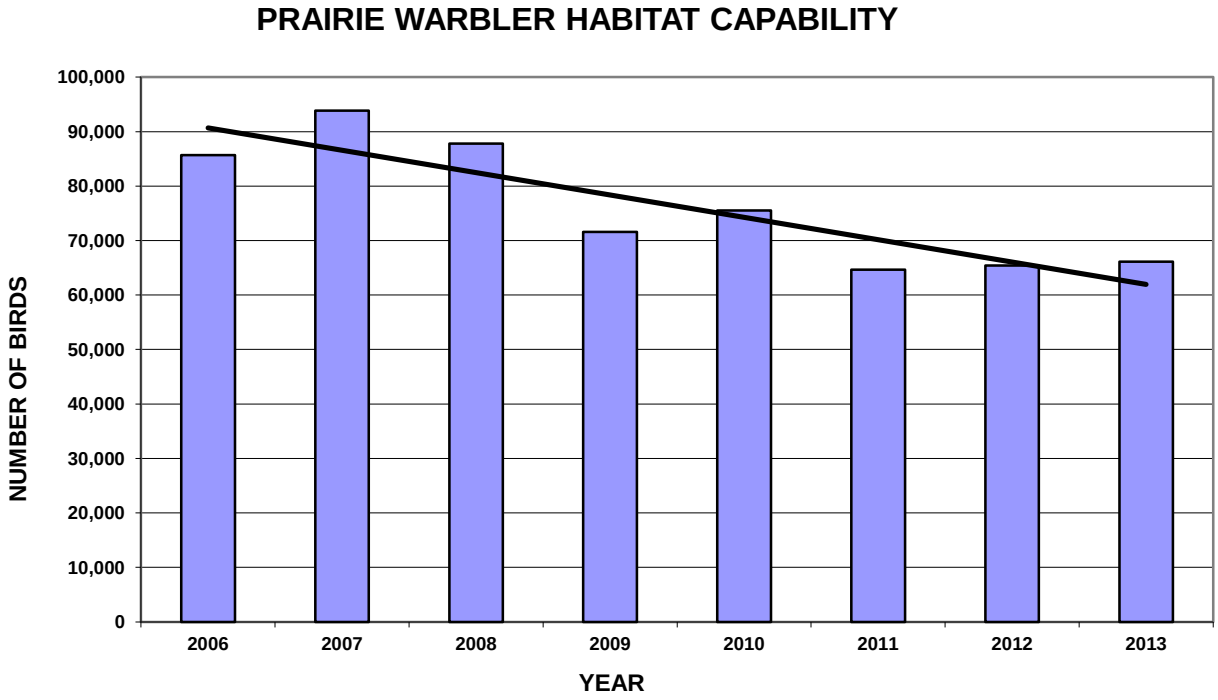
Prairie Warbler
Source: www.enature.com

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.
Data Sources: Ouachita NF Landbird Points data (1997 – 2013) 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 upward trend since FY 2006; however, the long term trend remains downward. The Landbird Points count data for the warbler has been mixed in numbers for the last several years, but an overall slight upward trend. Throughout the Prairie Warbler range, a downward trend is indicated.



Habitat capability for the Prairie Warbler on the Ouachita NF continues to show a downward trend, which is consistent with range-wide trends.



Interpretation of Trends for Prairie Warbler: The Prairie Warbler has demonstrated a slight increase since FY 2006 based on Landbird Points data but a decline in habitat capability. Under the 2005 Forest Plan implementation, 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 2005a, p175.) Data support 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 habitat 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. Although declining, the 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 that associated with approximately 200,000 acres of shortleaf-bluestem ecosystem restoration, will benefit Prairie Warbler populations.

Red-cockaded Woodpecker (*Picoides borealis*)

For additional information, contact Mary Lane at (501) 321-5202

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 2005a, p166.) The RCW

is discussed in more detail previously in the 'Proposed, Endangered, and Threatened Species Habitat' Section of this report.

Scarlet Tanager *(Piranga olivacea)*

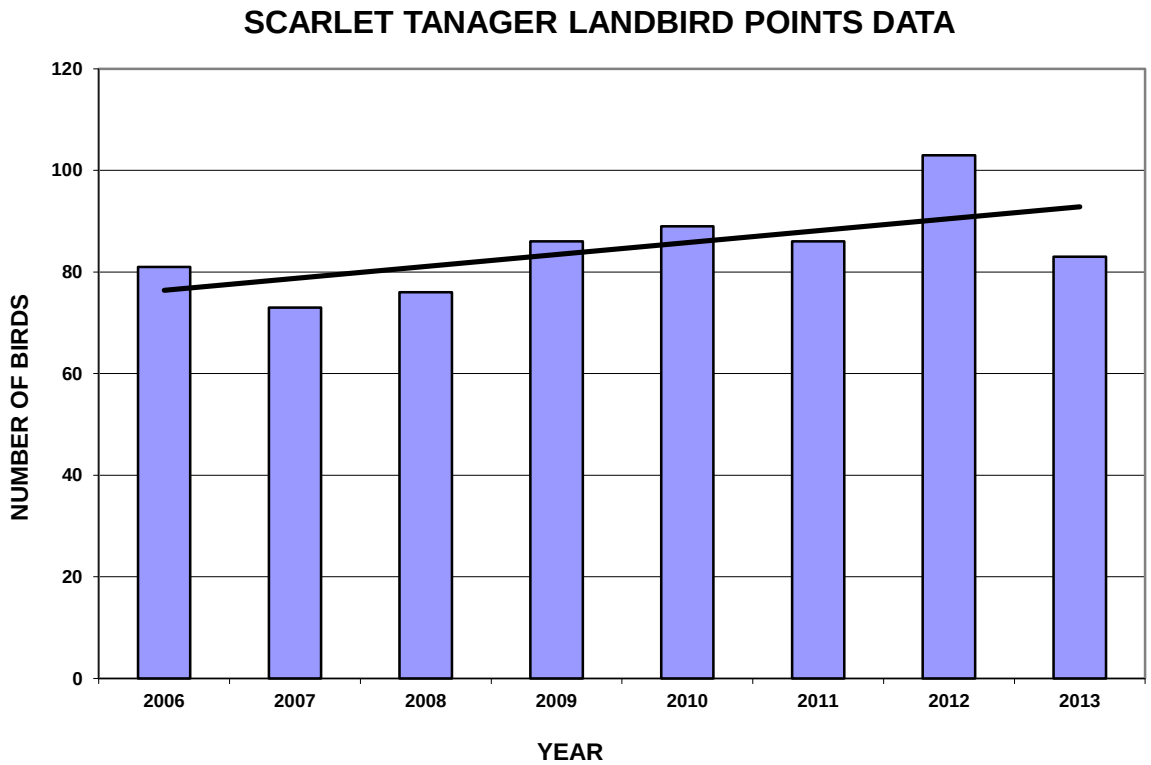
For additional information, contact Mary Lane at (501) 321-5202

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.

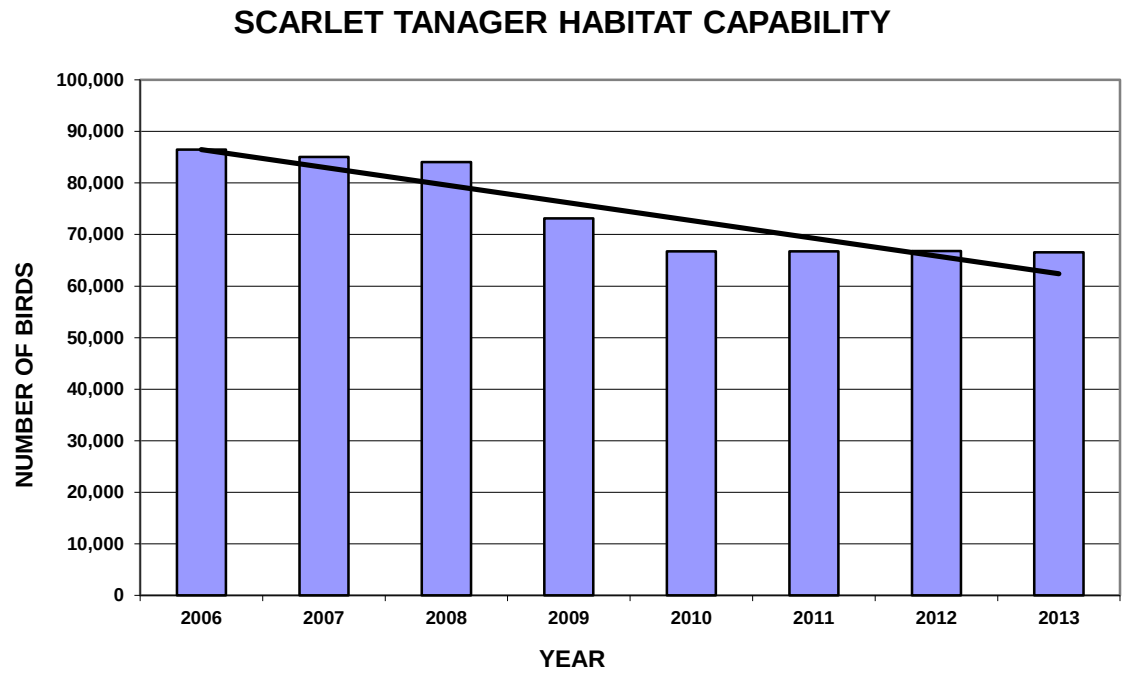
Scarlet Tanager
Source: www.enature.com

Data Sources: The Ouachita NF Landbird Points data and habitat capability predictions using CompPATS wildlife model, and Field Sampled Vegetation (FSVeg) data were used to make a population trend assessment.

Population Trends: The Landbird Points data collected from FY 2006-2013 indicate an overall stable to increasing trend for the Scarlet Tanager.



In contrast to Landbird Points data, Ouachita NF habitat capability data suggest a downward trend for Scarlet Tanager.



Interpretation of Trends for the Scarlet Tanager: Data support 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 has an apparent gradual, increasing trend within the Ouachita NF and the Ozark and Ouachita Plateau, and 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 Mary Lane at (501) 321-5202

The white-tailed deer is a management indicator species (MIS) that was selected to help indicate the effects of management on meeting the public hunting demand (USDA Forest Service 2005, p165). However, the Arkansas Game and Fish Commission biologists look at early seral creation as an indicator for management of this species, as well. In the 2005 Forest Plan, the desired habitat condition is to sustain healthy populations of native and desired non-native wildlife and fish species.

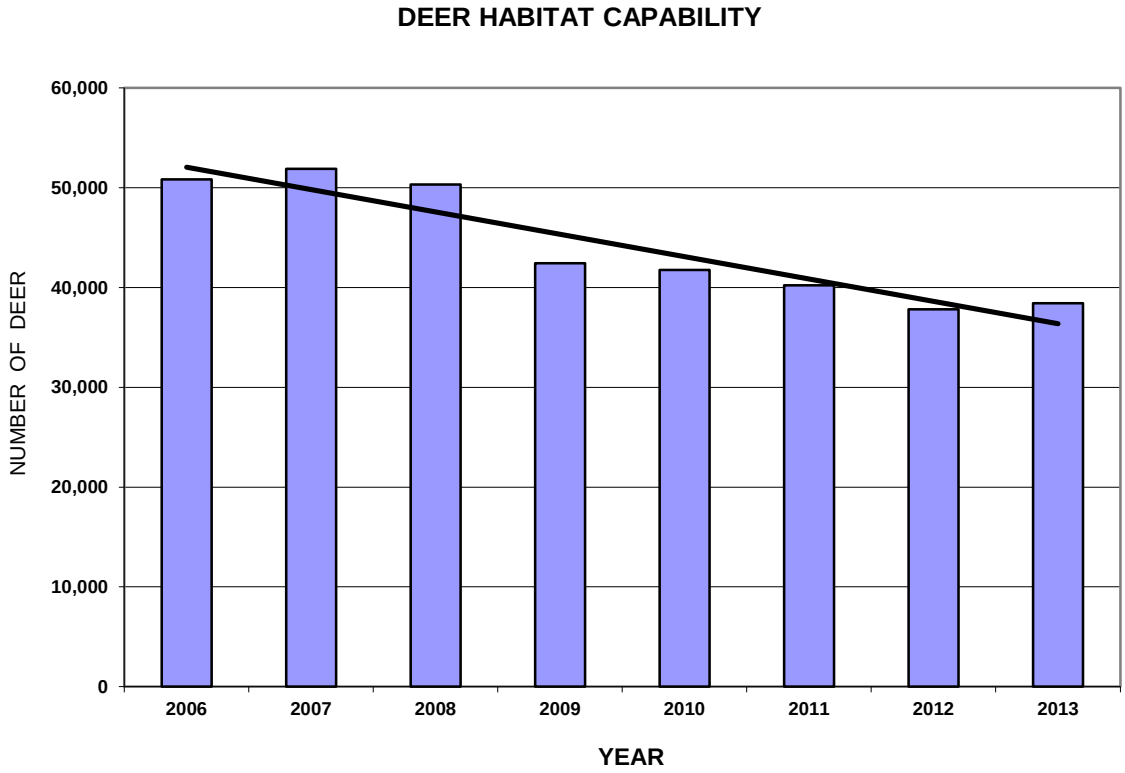
White-tailed Deer
Source: www.enature.com

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.

Deer Population Trends: The estimated habitat capability for deer for fiscal years 2006-2013 shows a downward trend, but is within the range of the desired habitat capability of 38,105 acres for FY 2015. Habitat carrying capacity is calculated using acres within the Ouachita NF and is positively influenced by the number of acres of prescribed fire accomplishments 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.

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 2005 Forest Plan (USDA FS 2005) indicates in Table 3.59 (p. 166), a desired terrestrial habitat capability to support an average of 13.7 deer per square mile within the Ouachita NF after 10 years. This is calculated on a land base of 1,789,853 acres (2,797 square miles) for a habitat capability that would support 38,314 deer. The habitat capability as estimated by the CompPATS wildlife model exceeds the 2005 Forest Plan projections for every year in the period 2006 -2013 but is showing a decreasing trend. However, the deer harvest data indicate increasing deer density. The 2005 Forest Plan objective is to create 5,500 acres of early seral stage (grass/forb) habitat per year, and 2,605 and 925 acres were created by regeneration harvests in FY 2012 and 2013, respectively.



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 is showing a slightly increasing trend in the last few years.

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

Terrestrial MIS Summary

For additional information, contact Mary Lane at (501) 321-5202

This review of monitoring information for the seven terrestrial management indicator species was conducted to determine the status of each species and its management needs. The following tabulation displays the expected population trends, apparent population trends, risk for conservation of species, and management changes needed. This review shows poor habitat conditions and capability for three species: Eastern Wild Turkey, Northern Bobwhite, and Prairie Warbler. Additional management activities to increase the development of early seral habitat through shelterwood and seedtree stand development for early seral species are needed. Also an increase in prescribed burning and thinning is needed for the development and improvement of Northern Bobwhite habitat. All three of these species are showing declines on the Ouachita NF within Arkansas and Oklahoma, as well as throughout the region.

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

R8 Sensitive Species and Terrestrial Species of Viability Concern

For additional information, contact Mary Lane at (501) 321-5202or Betty Crump at (501) 321-5202

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, etc.).

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, 19.) There are 67 species on the R8 Sensitive Species list that are known to occur on the Ouachita NF. Of those, 44 are known to be 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 listed on the Regional Forester Sensitive Species list are regularly monitored: the Bald Eagle, the Caddo Mountain salamander, the 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. This revision should be completed in FY 2015.

Bald Eagle (*Haliaeetus leucocephalus*)

For additional information, contact Mary Lane at (501) 321-5202

Bald Eagle
Source: www.enature.com

Bald Eagles were removed from the endangered species list in June 2007 due to species population recovery. When the Bald Eagle was delisted, the USFWS 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. Surveys in 2012 and 2013 on the Ouachita NF showed four known nest sites (Irons Fork Lake, Lake Ouachita, North Fork Lake, and a new site near High Point Mountain, about 4 miles south of Waldron) with one confirmed nest success at North Fork Lake site. The previous active nest at Lake Hinkle was destroyed sometime during February 16, 2012 and March 2, 2012. The species is expected to remain stable.

Caddo Mountain Salamander *(Plethedon caddoensis)*

For additional information, contact Betty Crump at (501) 321-5202

In FY 2007, studies were conducted to identify and define species and species boundaries of the Caddo Mountain, Rich Mountain, and Fourche Mountain salamanders, using modern DNA sequencing techniques. No recent surveys for the Caddo Mountain Salamander have been conducted. The 2005 SVE score for this species declined from a "Good" to a "Fair" ranking in 2010 primarily due to road density and fire history.

Caddo Mountain Salamander
Source: Dr. Stan Trauth

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

For additional information, contact Betty Crump at (501) 321-5202

No Rich Mountain slit-mouth snails were found during the 30-50 minute searches of five sites in FY 2012, or during the 30-40 minute searches of eight sites in FY 2013. In FY 2011, the Oklahoma Ranger District conducted surveys at 8 sites (30 minutes each site) finding a total of 5 Rich Mountain slit-mouthed snails. All of the sites are existing sites that are monitored on a three-year cycle. No surveys were conducted on the Mena/Oden Ranger District during FY 2011. In FY 2010, the Mena Ranger District found 6 live Rich Mountain slit-mouth snails on 2 new sites, and the Oklahoma sites revealed 1 live individual during eight 30-minute surveys. 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 FY 2012 or FY 2013, this species will require continued monitoring. .

No Rich Mountain slit-mouth snail individuals were discovered in FY 2009 during six 30-minute surveys (three hours). In FY 2008, nine 30-minute surveys (4.5 hours) were conducted at 9 sites over 3 days. Live snails were found at 3 sites for a total of 16 snails. Six 30-minute surveys (3 hours) were conducted at each of the 5 sites over 3 days in FY 2007 for a total of 15 live snails. Five 30-minute surveys (2.5 hours) were conducted at each of the 5 sites over 4 days in FY 2006, and 4 contained snails (8 total live snails were found).

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

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

For additional information, contact Mary Lane at (501) 321-5202

The Ouachita NF initiated a bat acoustic survey protocol in FY 2009 to monitor bat population trends and assess the impacts of White Nose Syndrome (WNS) on the summer distribution of bats. During fourteen survey nights in the first year the Ouachita NF captured calls from seven bats species. *Myotis leibii* (Eastern small-footed bat), an R8 sensitive species rarely found to occur on the Ouachita NF, was identified during four of the survey nights on two separate survey routes. The SVE scores (2010) for both bat species remain in the "Good" category.

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

Terrestrial Proposed, Endangered, and Threatened Species Habitat

For additional information, contact Mary Lane at (501) 321-5202

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 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 Forest and 5 are known to be terrestrial species. Specifically within the Ouachita NF, five terrestrial, federally endangered species and one species listed as threatened occur or have the potential to occur on the Forest. For the three listed birds, one mammal, one insect, and one reptile species, habitat scores indicate that the American burying beetle and Indiana Bat are stable and that the Red-cockaded Woodpecker has improved.

A list of species, species federal status, and a comparison of 2005 and 2010 SVE scores follow. These data were prepared for the Five-year Review and will not be updated until 2015. Where species have not yet been evaluated, it is noted.

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

*Listed in FY 2014 and not reported in this FY 2012 – FY 2013 M & E Report

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)*	**Proposed Endangered**	**NA- Not evaluated**	**NA- Not evaluated**
Piping Plover (*Charadrius melodus*)	**Endangered**	**NA- No known occurrences on the Forest**	**NA- No known 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**	**4.00 Very Good**
Missouri Bladderpod (*Lesquerella filiformis*)	**Endangered**	**NA- Not evaluated**	**NA- Not evaluated**

American Burying Beetle (*Nicrophorus americanus*)

For additional information, contact Mary Lane at (501) 321-5202

In May 2010, the Ouachita NF was issued a Revised Programmatic Biological Opinion for the American Burying Beetle 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.

American Burying Beetle
Source: USFS

This Conservation Plan used the most current research and data from the US Fish and Wildlife Service (USFWS) and the three National Forests. The Conservation Plan addresses conservation and improvement of habitat for ABB rather than just protecting individual beetles from human disturbances, which was the focus of earlier work.

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 (4 years).

Within the 2005 Forest Plan, at Standards, TE005, the following requirement is listed, *"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 should be amended to show the two new ABB conservation areas (AR and OK) along with a revised Standards similar to the following "Follow the most current ABB Conservation Plan and comply with the 2010 Revised Programmatic Biological Opinion, or the most current biological opinion, and following the most current USFWS protocol for monitoring."

In FY 2012 and 2013, a total of 36 transects each year, were monitored using the current USFWS protocol. 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. In 2012, one ABB female was captured in LeFlore County, OK, surveys and a male was captured in Scott County, AR, both on permanent survey routes. In 2013, 2 females were captured in LeFlore County, OK, both on permanent survey routes within the ABBAs.

Indiana Bat (*Myotis sodalis*)

For additional information, contact Mary Lane at (501) 321-5202

Indiana Bat
Source: www.enature.com

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 of this species in the Forest or on adjacent lands. The 2010 surveys, however, did find 25 Indiana bats hibernating at Bear Den Cave. According to the 5-year review on the status of the Indiana bat, white-nose syndrome has reduced the range-wide population estimates by approximately 50 percent, with expectations of even greater mortality impacts expected (USFWS 2009). Surveys in 2012 found at least 5 Indiana bats hibernating in Bear Den Cave. No surveys were conducted at Bear Den Cave in 2013.

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), but not south into the Ouachita Mountains. Indiana bats occasionally hibernate in small numbers in Bear Den Cave on the Forest in eastern Oklahoma but have not been detected there or anywhere else on the Forest during the breeding season. Bear Den Cave represents the only natural cave habitat known 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.

Bats and White-Nosed Syndrome (WNS)

For additional information, contact Mary Lane at (501) 321-5202.

In 2007, around 10,000 bats died in several New York caves, which was a large portion (approximately one-half) of the bats that customarily over-wintered in the protective caves. Upon investigation, most of the dead bats had a white powdery substance around their noses, later found to be a cold-loving fungus that grew around the nose and in some cases, ears, and to a lesser extent, wings of hibernating bats. White-nose Syndrome (WNS) is a fungal disease that has killed millions of bats in North America. The disease is caused by a fungus from Eurasia, which was accidentally transported here by humans. The fungus, *Pseudogymnoascus destructans*, invades the skin of hibernating bats and disrupts both their hydration and hibernation cycles. Infected hibernating bats awake repeatedly during the winter, burning up limited fat reserves. Mortality occurs as the bats often leave hibernation sites in late winter, dehydrated and in search of food die. The fungus is transmitted primarily from bat to bat. Currently, WNS is found in 25 US states including northwest Arkansas within the caves on the Ozark NF, and 5 Canadian provinces. The fungus that causes WNS is found in three more US states as well (http://batcon.org/index.php/our-work/regions/usa-canada/address-serious-threats/wns-intro).

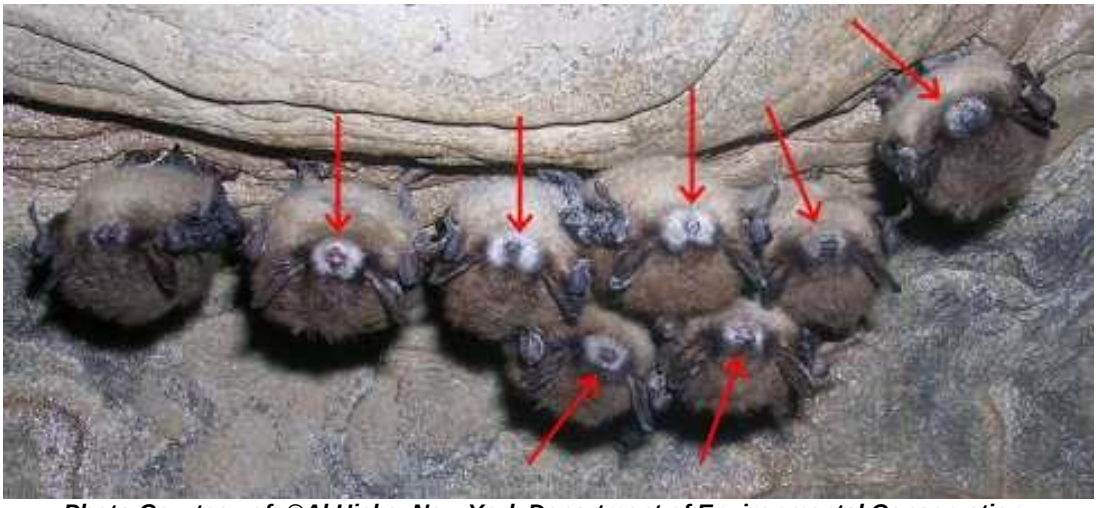


Photo Courtesy of: ©Al Hicks, New York Department of Environmental Conservation.
Arrows point to unusual white noses on bats in a New York cave during the winter, 2006, apparently caused by a fungus and possibly related to an unusual number of bat deaths.

The Oklahoma Division of Wildlife Conservation reports that a Cave Myotis (*Myotis velifer)* bat collected alive on May 3, 2010, from a cave in northwest Oklahoma has tested positive for WNS. Although genetic tests indicate that the bat from Oklahoma was harboring the fungus, the pattern of infection was not consistent with the WNS infection observed in bats in the eastern United States, and there has not been a mortality event attributable to WNS in Oklahoma to date. The USDA Forest Service has completed monitoring surveys on the Ouachita NF for WNS in 2012 and 2013 and none of the monitored caves or mines on the Ouachita show evidence of WNS. White-nose syndrome is responsible for the mortality of more than one million bats in the northeastern United States since it was first identified in 2006. If WNS becomes more prevalent, additional steps may be required to protect bat populations on the Ouachita NF in Arkansas and Oklahoma.

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

For additional information, contact Robert Bastarache at (580) 494-6402 x107 or Mary Lane at (501) 321-5202

The USFWS federally listed Endangered species, the Interior Least Tern and Piping Plover, are known to occur at Red Slough. The Interior Least Terns are regularly seen from late Spring to early Fall and can be seen feeding over the wetlands and reservoirs. They nest on nearby sandbars in the Red River and bring their fledged young to Red Slough to teach them how to catch fish. The Piping Plover is very rare at Red Slough as they prefer sandy beaches along shorelines. This species has shown up during migration on mudflats on 2 or 3 occasions.

The FY 2012 saw the fewest number of Least Terns ever using Red Slough within the 15 years the Forest Service has been actively managing it. The FY 2013 saw a small rebound in the numbers recorded, although still very low. Because of the drought in southeast Oklahoma, the breeding populations along the Red River suffered greatly, as well; and it is from those breeding colonies the Least Terns that frequent Red Slough originate.

Most Piping Plovers that occur on the Ouachita NF in Arkansas and Oklahoma are passing migrants and are only occasionally seen foraging within the Red Slough Wildlife Management Area. During FY 2011, 2012 and 2013, drought was widespread and may have affected

populations of Piping Plover; however there have been no sightings of Piping Plover in the Red Slough since the single sighting in 2006 for some unknown reason.

Least Tern
Source: David Arbour

Piping Plover
Source: David Arbour

The Least Tern and Piping Plover are not known to occur as reproducing populations on the Forest (James and Neal, 1986; Peterson, 1980). The tabulation below for Least Terns and Piping Plovers shows that Least Terns are observed much more often than Piping Plovers (generally observed only during migration). Most, if not all, of the observed Least Terns are from breeding colonies along or in the near vicinity of the Red River.

	2006	2007	2008	2009	2010	2011	2012	2013
Least Terns	**17**	**56**	**81**	**21**	**63**	**8**	**9**	**18**
Piping Plovers	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Northern Long-eared Bat *(Myotis septentrionalis)*The Northern Long-eared Bat (NLEB) was formally proposed for federal listing on the second day of Fiscal Year 2014, and will be reported in the M & E that covers FY 2014 report.

General information about this species follows:

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. The northern long-eared bat (NLEB) is a medium sized bat about 3 to 3.7 inches but with a wingspan of 9 to 10 inches. Its fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus, Myotis, which are actually bats noted for their small ears (Myotis means mouse-eared). The NLEB has been found to occur throughout the Ouachita NF, and is now considered in all project analyses. No other threat is as severe and immediate as the disease, white-nose syndrome (WNS). The Ouachita NF has gated all known mines or caves with bat-friendly gates to allow access for the bats, and to prevent other disturbances. These caves/mines are monitored for WNS, as well as bat population trends.

Photo by New York Dept. of Conservation; Al Hicks

Red-cockaded Woodpecker (*Picoides borealis)*

For additional information, contact Warren Montague at (479) 637-4174 or Robert Bastarache at 580 494-6402 x 107 or Mary Lane at (501) 321-5202

The Red-cockaded Woodpecker (RCW) is both a federally listed endangered species and an MIS for the Ouachita NF. The MA 22, Renewal of the Shortleaf Pine-Bluestem Grass Ecosystem and Red-cockaded Woodpecker Habitat with 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 land 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 two Habitat Management Areas (HMAs; one in Arkansas, one in Oklahoma) for the endangered Red-cockaded Woodpecker (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 RCW was selected as an MIS for the Ouachita NF due to its 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 2005a, p166.)

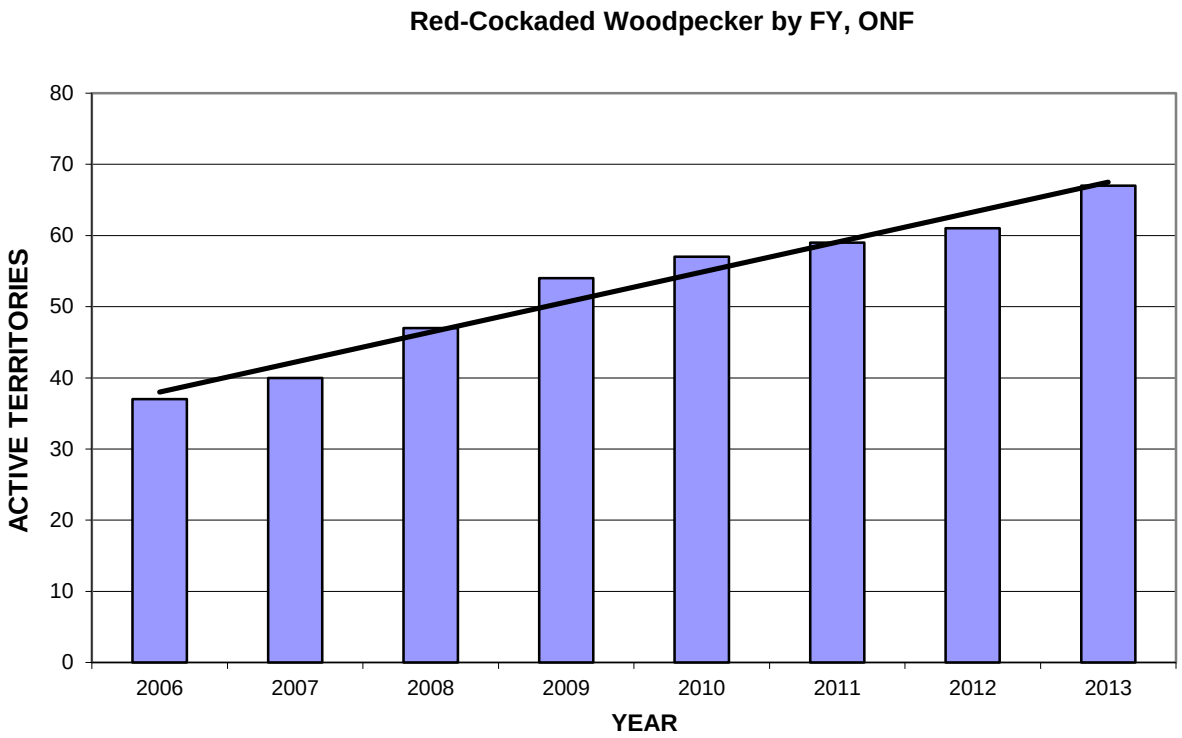
Red-cockaded Woodpecker Trends: RCW active territories have been increasing from a low of 11 territories to the present high of 67 active territories in FY 2013. Over the period that RCWs have been monitored on the Forest, the number of active territories and number of adult birds have increased.

The tabulation below shows the successful 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 (# of 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 # of Potential Breeding Groups or PBGs (USDI FWS 2003).

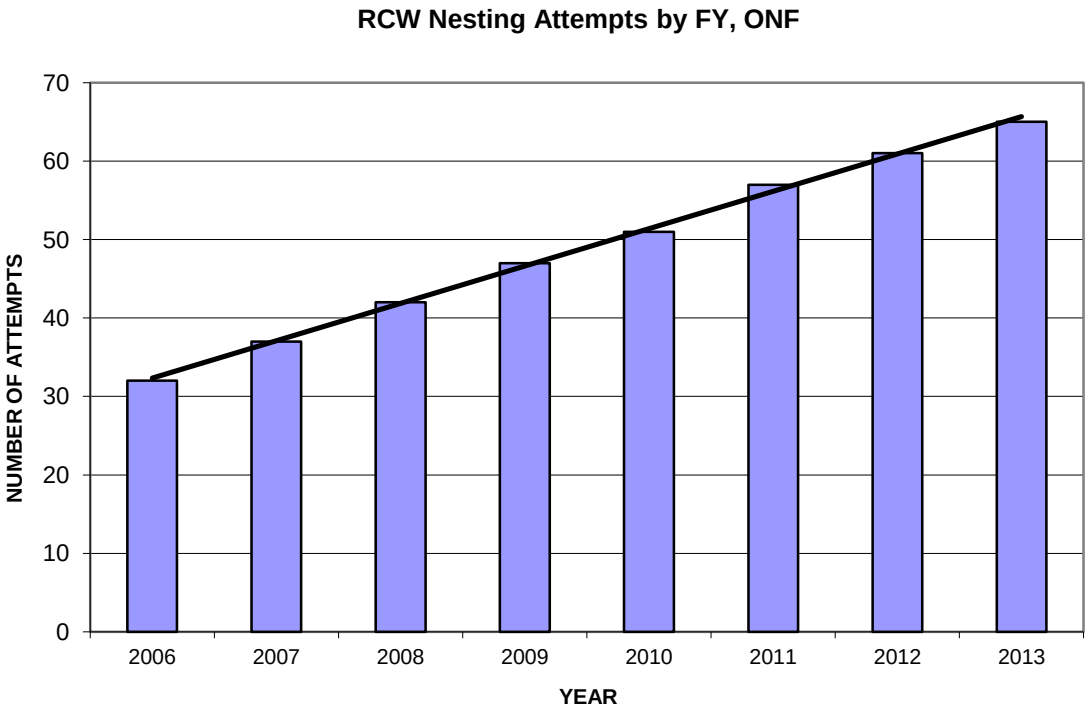
RCW Management Ouachita NF				
RCW Breeding Season	**Active Territories**	**Nesting Attempts**	**Estimated Fledglings**	**Number of Adult Birds**
1990	**13**	**12**	**10**	**32**
1991	**16**	**12**	**18**	**32**
1992	**14**	**13**	**13**	**32**
1993	**15**	**12**	**14**	**38**
1994	**16**	**10**	**17**	**35**
1995	**14**	**12**	**17**	**34**
1996	**11**	**11***	**16**	**26**
1997	**13**	**9**	**7**	**26**
1998	**14**	**11**	**16**	**24**
1999	**16**	**11**	**14**	**36**
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**

**Includes renest attempts*

RCW active territories have increased from a low of 11 territories in FY 1996 to 61 and 67 active territories in FY 2012 and 2013, respectively. The graph below shows the success of RCW management on the Ouachita NF for the past 8 years, with this increase being evident since the 1990's. The number of active territories has increased an average of 9 percent for each of the last 8 years. During FY 2013, a successful translocation to the Oklahoma RD, 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.



Nesting attempts have also steadily increased over the past 8 years. The number of nesting attempts has increased an average of 12 percent for each of the last 8 years.



Implications for Management: Management of this species is guided by the RCW Recovery Plan with an objective of a minimum 5 percent 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 an increasing trend. Barring any major catastrophic events, RCW

populations should continue to improve under the present management intensity. A large-scale ecosystem restoration project was initiated in Management Area 22 to restore the shortleaf pine-bluestem grass ecosystem on over 200,000 acres. This project will eventually provide sufficient habitat for a recovery population of the endangered Red-cockaded Woodpecker (USDA Forest Service 2005a). 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 management intensity should be maintained and intensive monitoring continued.

American Alligator (*Alligator mississippiensis*)

For additional information, contact Robert Bastarache at (580) 494-6402 x107 or Mary Lane at (501) 321-5202

The American alligator ranges across southeastern North America. With enforcement of protective legislation, populations have shown rapid recovery from habitat loss and over-hunting and are stable or increasing in most of its 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 now seems secure from extinction and was pronounced fully recovered in 1987. Surveys of the American alligator on the Oklahoma Ranger District in 2012 and 2013 located 18 and 32 alligators, respectively, in Red Slough and Ward Lake with the 32 alligators counted in FY 2013 a record high.

American Alligators at Red Slough
Photo Courtesy of David Arbour

Alligators Counted, FY 2006 – 2013, ONF

	2006	2007	2008	2009	2010	2011	2012	2013
Alligators counted	**12**	**8**	**4**	**7**	**19**	**22**	**18**	**32**

The FY 2013 increase is attributed to successful hatchings at Red Slough and on Ward Lake. In FY 2012, two nests hatched a total of 18 babies. In FY 2013, there were no nests. The population on Red Slough has remained fairly steady at 8-10 individuals seen per year, with over 30 seen in FY 2013, with this number probably due to the increase in young from previous seasons surviving to adulthood.

The only suitable or potential habitat for this species occurring on the Forest is within the West Gulf Coastal Plain Wet Hardwood Flatwoods of the Red Slough WMA of southeastern Oklahoma, where it has been seen in streams and ditches that run through the WMA. At least one alligator has also been observed in Broken Bow Lake in Oklahoma, but there is little, if any suitable habitat for this species on nearby National Forest System land.

Missouri Bladderpod (*Lesquerella filiformis*)

For additional information, contact Susan Hooks at (501) 321-5202

The Missouri bladderpod was added to the Federal List of Endangered and Threatened Plants on January 8, 1987 as an endangered species. Natural habitat for the Missouri bladderpod is primarily open limestone glades; but it has been found on one dolomite glade in Arkansas. Missouri Bladder Pod was monitored in FY 2013. Population at the Avant Site near the Cedar Fourche Recreation Area was in full bloom. This population was on the east side of the cedar Fourche road just outside of the recreation area. The population is small as earlier reported and each individual had multiple flowers. There were not apparent signs of disease or damage from browsing. There were approximately 150 individuals.

Other Habitat Considerations - Wildlife

For additional information, contact Mary Lane at (501) 321-5202

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

Hunting

Hunting is permitted anywhere on the Ouachita NF except within developed recreation sites or otherwise posted areas. Otherwise, hunting is permitted throughout the Ouachita NF during hunting seasons designated by the AGFC and the ODWC. All state hunting and fishing regulations, fees, and seasons apply on National Forest System lands. Hunting with dogs is not allowed on Ouachita NF System lands within 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. By contrast, hunting with dogs is not allowed on the Ozark-St. Francis National Forests.

Wildlife Management Areas

In Arkansas, on the Ouachita NF, there are three Wildlife Management Areas, each established by Memorandum of Understanding between the land owning parties in 1968: Caney Creek, Muddy Creek and the Winona WMAs. These WMAs are managed by the AGFC for the benefit of the hunting public.

The National Wild Turkey Federation (NWTF) and the AGFC are instrumental in efforts for WMA and Walk-In Turkey Area wildlife food plot establishment, maintenance and reclamation, as well as dozer work for access route improvements. The Ranger Districts provide assistance with some native seed and fertilizer, but the AGFC contracts for disking, mowing/bushhogging, seeding, fertilizing and any dozer work needed to allow access to the food plots.

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. Food plot maintenance in the Caney Creek WMA is on a two-year rotation, so AGFC maintained 72 food plot acres during FY 2012, and 68 food plot acres during FY 2013. The NWTF additionally funded 125 acres that were mowed and planted, and with a dozer contract accomplished 17 miles of secondary road maintenance for food plot access that has been compromised from heavy rains in recent years.

Muddy Creek WMA (150,000 acres) is located on National Forest System land and lands owned by other cooperators in Montgomery, Scott, and Yell Counties. Food plot maintenance in the Muddy Creek WMA is on a two-year rotation, so AGFC maintained 160 food plot acres during FY 2012, and 160 food plot acres during FY 2013.

The Winona WMA (160,000 acres) is located on lands jointly owned by Green Bay Packaging and the Ouachita NF in Garland, Perry, and Saline Counties. Food plot maintenance in the Winona Creek WMA is also on a two-year rotation, so AGFC maintained 160 food plot acres during FY 2012, and 160 food plot acres during FY 2013.

In Oklahoma, there are four 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 two counties in Oklahama are contained within WMAs.

All of the National Forest System lands within LeFlore County are contained within either the Ouachita LeFlore Unit WMA (212,836 acres) or the Cucumber Creek WMA (12,627 acres with 3,514 owned by The Nature Conservancy). 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).

On the Ouachita WMA in cooperation with the ODWC and NWTF, 130 food plots are maintained of which 40 per year are planted. Food plot size is around ½ acre; however a few are larger (about an acre). For 2012 and 2013, 45-50 acres of food plots per year were maintained. No new food plots were established. The NWTF contributes to the prescribed burning which is in a three-year rotation allowing for almost continual new growth.

The Red Slough WMA is cooperatively managed by the Ouachita NF, Natural Resources Conservation Service and ODWC. The Red Slough WMA is enrolled in the Wetland Reserve Program which is administered by the NRCS. The WRP has a permanent easement that gives NRCS ultimate authority over the project activities that can take place on the ground. The NRCS is responsible for ensuring the effectiveness of the goals and objectives of the Wetland Reserve Program, including funding for all WRP projects. Day to day management activities are handled by the ONF and ODWC. Below are reports on monitoring of nest box and egg hatch rate success for species in the Red Slough WMA.

Red Slough WMA
Nest Box Success Rates Monitoring Results by FY, ONF

	2007	2008	2009	2010	2011	2012	2013
WODU	**50%**	**38%**	**45%**	**30%**	**40%**	**26%**	**62%**
HOME	**88%**	**87%**	**100%**	**54%**	**70%**	**19%**	**78%**
BBWD	**46%**	**100%**	**86%**	**59%**	**23%**	**62%**	**64%**
WODU – Wood Duck **HOME - Hooded Merganser** **BBWD - Black-bellied Whistling Duck**							

Red Slough WMA
Egg Hatch Rate Success* by FY, ONF

	2007	2008	2009	2010	2011	2012	2013
WODU	**724/713**	**791/1271**	**551/681**	**552/1298**	**520/769**	**293/818**	**420/260**
HOME	**44/6**	**41/6**	**56/0**	**120/101**	**59/25**	**71/304**	**130/36**
BBWD	**11/13**	**15/0**	**48/8**	**62/43**	**19/63**	**23/14**	**9/5**
***Hatched eggs/Unhatched eggs** **WODU – Wood Duck** **HOME - Hooded Merganser** **BBWD - Black-bellied Whistling Duck**							

The Red Slough WMA bird surveys through FY 2013 reveal a total of 317 bird species (Appendix E). Some of the more 'rare' species that regularly-to-occasionally occur are: Black-bellied Whistling Duck, Trumpeter Swan, Mottled Duck, Wood Stork, Roseate Spoonbill, Glossy Ibis, Golden Eagle, King Rail, Yellow Rail, Cave Swallow, Common Ground-Dove, Swainson's Warbler and Henslow's Sparrow.

Vagrants are species that are outside of their normal range and not normally expected to be seen in a given area. Those that have been seen on the Red Slough WMA, include: Fulvous Whistling Duck, Tundra Swan, Least Grebe, Magnificent Frigatebird, Swallow-tailed Kite, Harris' Hawk, Crested Caracara, Sabine's Gull, Sooty Tern, Royal Tern, Band-tailed Pigeon, Ash-throated Flycatcher, Great Kiskadee, Western Kingbird, Brewer's Sparrow, Lark Bunting, McCown's Longspur, Chestnut-collared Longspur, Snow Bunting and Lazuli Bunting.

Gulf Coastal Plain species that only reach the extreme southeast portion of Oklahoma, typically don't occur elsewhere in the state and are a big attraction to the birdwatchers include: Anhinga, White Ibis, and Purple Gallinule. Other wetland species that are seldom seen elsewhere in the state due to the disappearance of wetlands include Least Bittern and Common Gallinule. Species that are not necessarily rare or limited in range but are difficult to see due to their secretive natures, and can be more easily found at Red Slough include: Bell's Vireo, Sedge and Marsh Wrens, Le Conte's Sparrow, and Nelson's Sparrow. And finally, two very popular and colorful birdwatcher species that are relatively common at Red Slough are the Prothonotary Warbler and Painted Bunting.

Walk-In Turkey Areas

There are nine Walk-In Turkey Areas on the Ouachita NF, seven in Arkansas and two 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 Ouachita NF in a place free of disturbance from motor vehicles. The Ouachita Mountains, with high turkey populations compared to other areas, have seen the number of hunters increase dramatically during the last 20 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 Ouachita NF, AGFC, ODWC, and the NWTF as a part of the Making Tracks Program. It began in 1989 as a way to improve wild turkey habitat on National Forest System lands.

Through an FY 2013 NWTF grant, the AGFC were able to: bushhog18 acres of food plots; plant 9.5 acres within the Sharptop Walk-In Turkey Area in AR; and reclaim 7.5 acres of food plots and improve access for continued plot maintenance (dozer contract).

In OK, five food plots each (or 10 acres/Area) are annually maintained in Well Hollow Walk-In Turkey Area and in Blue Mountain Walk-In Turkey Area both within the Ouachita WMA and in cooperation with the ODWC.

Riparian and Aquatic Ecosystems and Habitat

For additional information, contact Betty Crump at (501) 321-5202

The desired condition for riparian and aquatic-associated terrestrial communities (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."*

The primary MA associated with riparian and aquatic ecosystems is Management Area 9, Water and Riparian Communities, consisting of approximately 278,284 acres. 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.

There are five riparian-associated vegetation community types and two aquatic ecosystems identified for watershed value as well as aquatic habitat:

- Ouachita Riparian
- Ouachita Mountain Forested Seeps
- West Gulf Coastal Plain Small Stream and River Forest
- South-Central Interior Large Floodplain
- West Gulf Coastal Plain Wet Hardwood Flatwoods (Red Slough)
- Ouachita Rivers and Streams
- Ouachita Lake and Ponds

Riparian and aquatic associated ecosystems comprise approximately 16 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.

Other Aquatic Habitat Components

Aquatic Management Indicator Species (MIS)

For additional information, contact Betty Crump at (501) 321-5202 or Richard Standage at (501) 321-5202

The tabulation on page xx shows all 24 MIS for the Ouachita NF under the 2005 Forest Plan with 7 of those being terrestrial and 17 of those species being aquatic. In this report, terrestrial MIS and riparian and aquatic MIS are presented separately. 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). The tabulation below displays the 17 fish species identified for the Ouachita NF under the 2005 Forest Plan as MIS.

Aquatic MIS Species for the Ouachita NF	
Common Name	**Scientific Name**
Pond, Lake and Waterhole MIS - 3	
Bluegill	***Lepomis macrochirus***
Largemouth Bass	***Micropterus salmoides***
Redear Sunfish	***Lepomis microlophus***
Stream and River MIS - 14	
Yellow bullhead*	***Ameiurus natalis***
Pirate Perch*	***Aphredoderus sayanus***
Central Stoneroller*	***Campostoma spadiceum***
Creek Chubsucker*	***Erimyzon oblongus***
Orangebelly Darter*	***Etheostoma radiosum***
Redfin Darter*	***Etheostoma whipplei***
Northern studfish*	***Fundulus catenatus***
Northern Hog Sucker*	***Hypentelium nigricans***
Green Sunfish*	***Lepomis cyanellus***
Longear Sunfish*	***Lepomis megalotis***
Striped Shiner*	***Luxilus chrysocephalus***
Smallmouth Bass*	***Micropterus dolomieu***
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 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.

Aquatic Management Indicator Species (MIS)

Ponds, Lakes, and Waterhole MIS

For additional information, contact Richard Standage at (501) 321-5202

There are three pond, lake, and waterhole management indicator species (MIS) and these species are reported on a calendar year basis rather than a fiscal year basis as are most other species discussed in this M & E Report: Bluegill, Largemouth Bass, and Redear Sunfish. Reviews of monitoring information for the three species were conducted to determine the status of the species and conservation needs. During calendar year 2012, 19 electrofishing samples were taken at 15 lakes and ponds. Shady Lake was sampled twice in the spring and once in the fall to monitor any recover of the lake from recent drainings or near drainings. North Fork Lake received two spring and two fall electrofishing samples due to the availability of Ouachita Baptist University students (shown in the picture below.) In 2013, 10 lake and pond samples were taken of seven waters. Shady Lake was again sampled twice and North Fork Lake 3 times with Ouachita Baptist University students. The Ouachita NF acknowledges the help in sampling by Dr. Jim Taylor and classes from Ouachita Baptist University. They have assisted in at least 43 samples in the past 15 years.

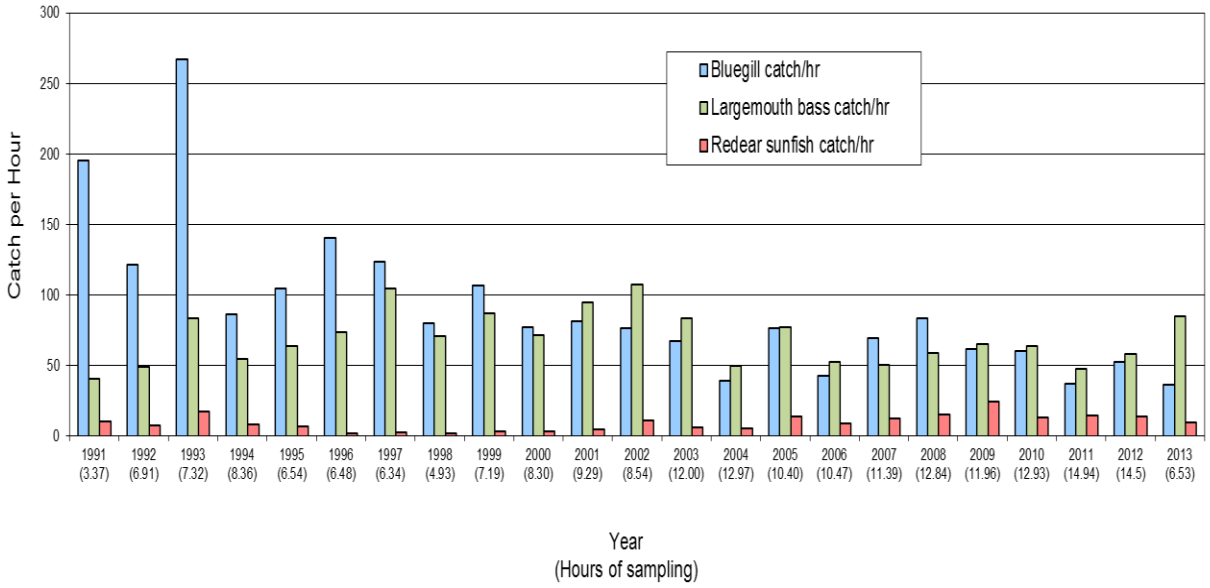
Ouachita Baptist University Students Assisting with Sampling

Electrofishing results since 2003 have been somewhat similar. The spring electrofishing seasons in the past several years have been characterized as a wet spring with temperatures cooler than normal with the result that Sunfish spawns were 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 thus less susceptible to electrofishing capture . In addition, Story Pond was again too shallow to launch the electrofishing boat except in 2012 but not in

2013 and it is one of the better waters for captures of large Bass and Sunfish in good quantities, particularly redear Sunfish. Low catch rates were also influenced by the time spent on sampling Shady Lake. The past 4 samples resulted in very limited catches of game fish due to incomplete recovery from prior water level management practices that weren't conducive to maintaining a harvestable sized fish population however recovery is being seen.

Annual Pooled Catch per Hour

Bluegill, Largemouth and Redear



Typical catches of big Bass were made at Cedar Lake in Oklahoma, with some nice Bass and catfish taken from a number of other lakes and ponds.

Shady Lake Largemouth Bass

North Fork Lake Electrofishing with students

Student taking lengths and weights of fish captured at North Fork Lake

The following discussions on Bluegill, Largemouth Bass, and Redear Sunfish, White Crappie, Gizzard Shad, and Threadfin 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 2012 and the fall sampling took place at the start of FY 2013 and data for both are included in this report.

Bluegill *(Lepomis macrochirus)*

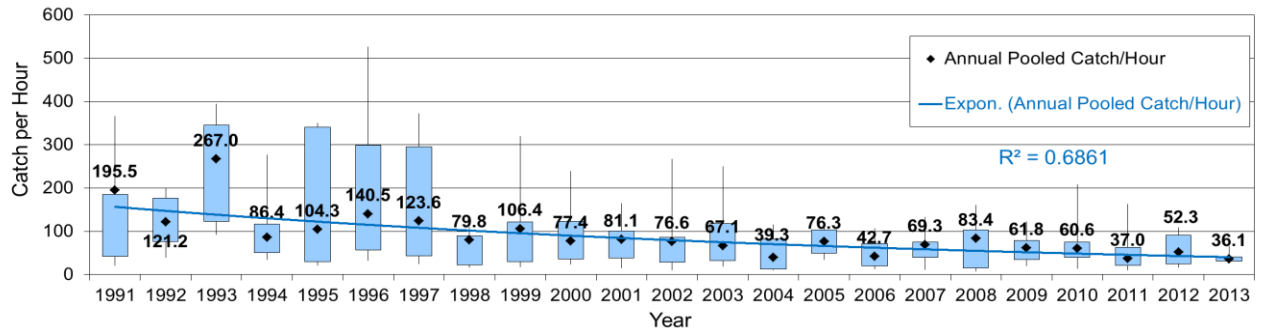
For additional information, contact Richard Standage at (501) 321-5202

The Bluegill electrofishing catch for 2011 was the second lowest since 1991 but was up a bit in 2012 and then the lowest in 2013. The spring samplings occurred before pre-spawn Sunfish had started to congregate in most of the lakes and the fall pond sampling seemed to have missed schooled large Sunfish. Ideally, the spring sample catches the Bass having spawned but with nest guarding still occurring, Redear Sunfish spawning and Bluegill staging in shallower areas to spawn, so a good representation of all species and sizes is sampled. With sampling normally occurring in 10-12 lakes in the spring within this temperature/spawning condition window, (but only four lakes in the spring of 2013 spread over the typical time frame) ideal conditions are missed as often as they are attained.

The trend line associated with the annual pooled catch per hour has a low statistical significance. Variability in sample sizes between water bodies is somewhat similar in 2012 to previous years. This graph displays the variability in annual samples with the widened bars

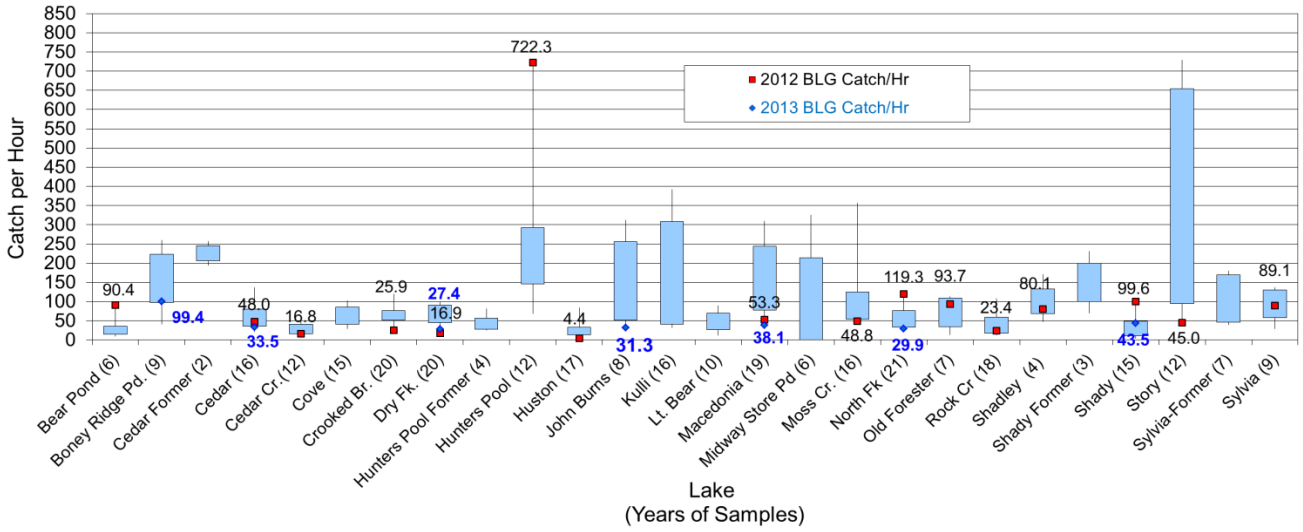
displaying the 25-75% range of the samples and the lines displaying the variability to the 10% and 90% levels. Variability is extremely low in 2013 due to the small number of water sampled.

Bluegill Catch per Hour by Year Forest-wide



The 722.3 Bluegill caught per hour at Hunters Pool drove the higher catch rate in 2012 and greater variability and the small sample size with only one pond with 99.4 Bluegill caught per hour drove down the annual catch rate in 2013.

Bluegill Catch per Hour by Lake

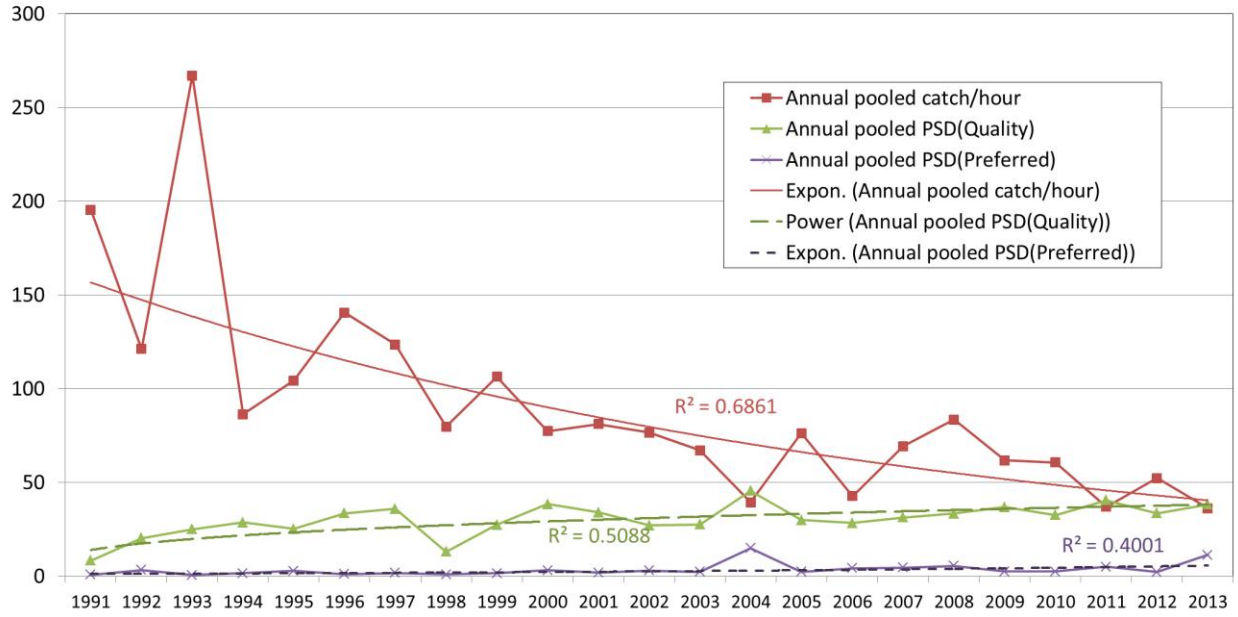


Harvestability of Bluegill in 2012 was low for Proportional Size Distribution (Quality), also known as PSD (Q). PSD (Q) is calculated from the numbers of Bluegill 150 mm (5.9 inches) and larger divided by the numbers of Bluegill of stock size (adults) that are 80 mm (3.1 inches) and larger, expressed as a percentage. It was low in 2012 due to the high catch of small Bluegill in Hunters Pool and higher in 2013 as a function of the smaller catch. The trend line shows a slightly increasing trend; however, it is not statistically significant (r^2=.51).

Proportional Size Distribution (Preferred), previously known as RSD (Relative Stock Density) for Bluegill equal to or greater than 200 mm (7.9 inches) long, was low in 2012 driven by the large

catch of small Bluegill at Hunters Pool, shows relatively few catches of bluegill above that size with an increasing trend line that is not statistically significant (r^2=0.38). The slight increase in the pooled 2013 catch for preferred-sized bluegill is attributed to the small catch of Bluegill with the small lake and pond sample size.

Catch per Hour and Quality and Preferred Size Distribution for Bluegill by Year



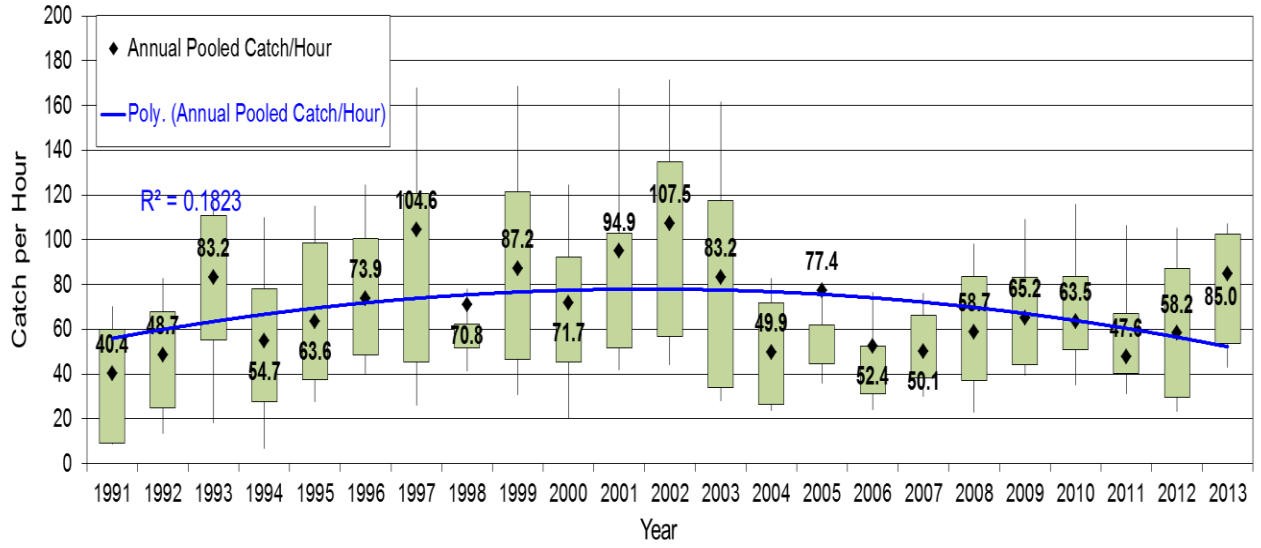
As sampled in 2012 and 2013, given the above constraints and conditions, bluegill populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question.

Largemouth Bass *(Micropterus salmoides)*

For additional information, contact Richard Standage at (501) 321-5202

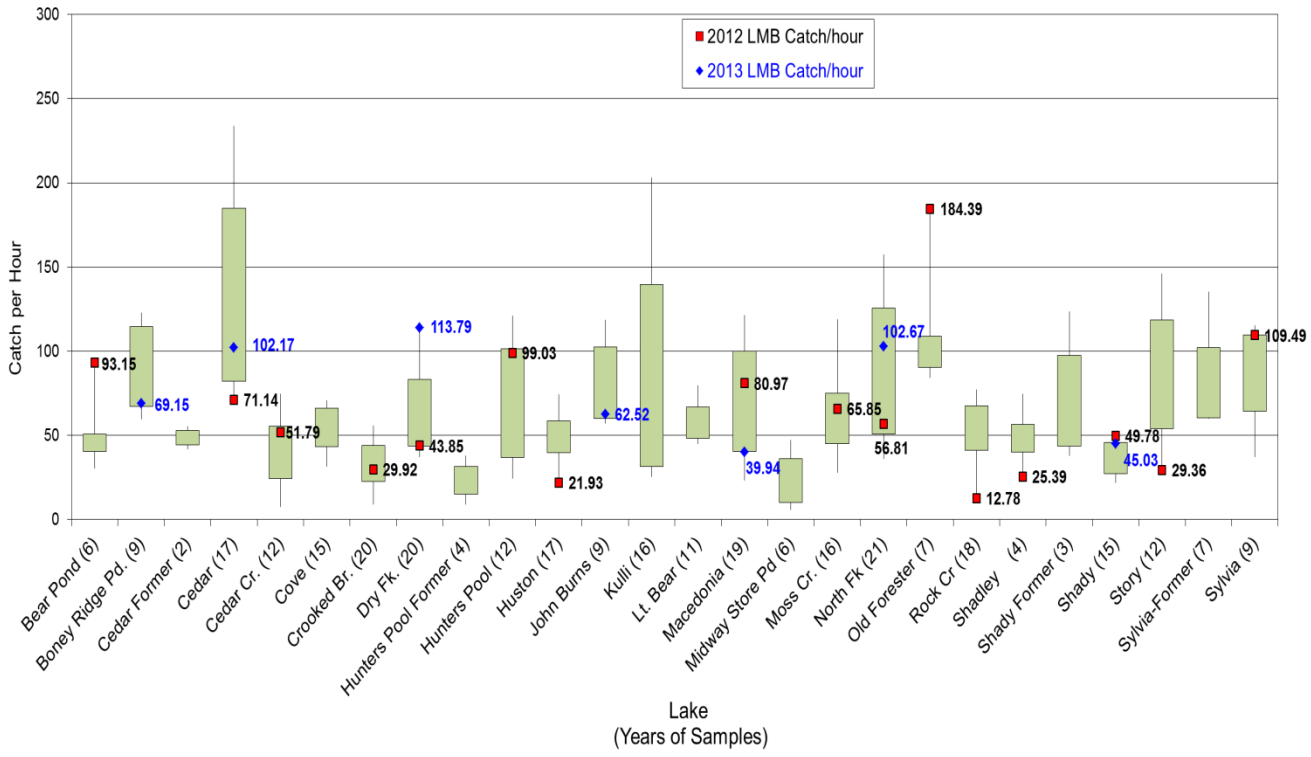
The Largemouth Bass electrofishing catch rate in 2012 and 2013 samplings were an improvement over the 2011 samplings. The 2013 catch rate was the highest of the past five years with the 2011 results the lowest for the same time period. The 2013 sampling results are slightly biased high by a smaller than normal number of lakes and ponds sampled that are the better producing Bass waters. Sampling results from the last twenty-three years are shown in the graph below.

Annual Pooled Largemouth Bass Catch per Hour



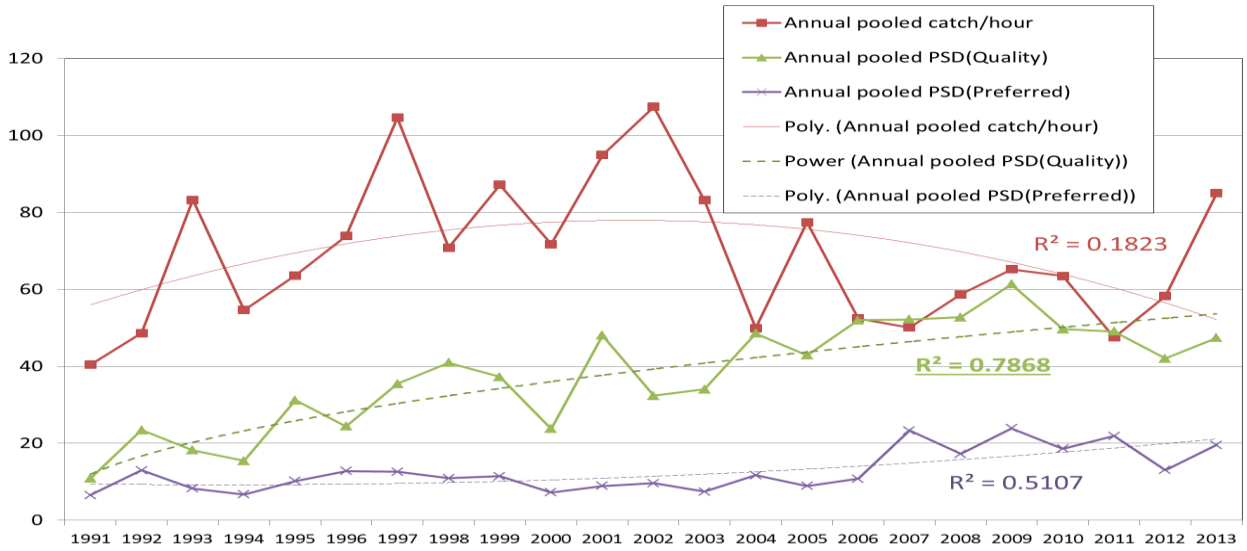
Largemouth Bass catch rates are higher in 2012 and 2013 than in 2011 with the variability comparable to recent samples but less variable than in many of the early samples until 2004. There also seems to be a slight increasing trend in catch per hour since 2006, even though the 23-year trend appears in a downward mode since 2003, though the latter is not statistically significant. More variability is shown with the 2012 sample than the 2013 Bass catches across the lakes and ponds sampled but the 2012 sample included more water bodies.

Largemouth Bass Catch per Hour by Lake



Harvestability of quality-sized Largemouth Bass dipped slightly in 2011 from 2010 results, dipped again in 2012 but increased slightly in 2013. Overall there is a mildly significant increasing 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



The PSD (Q) values for 2012 and 2013 show a fair amount of variability with the 2013 sample for PSD (Q) and (P) more closely following the trend line for each value.

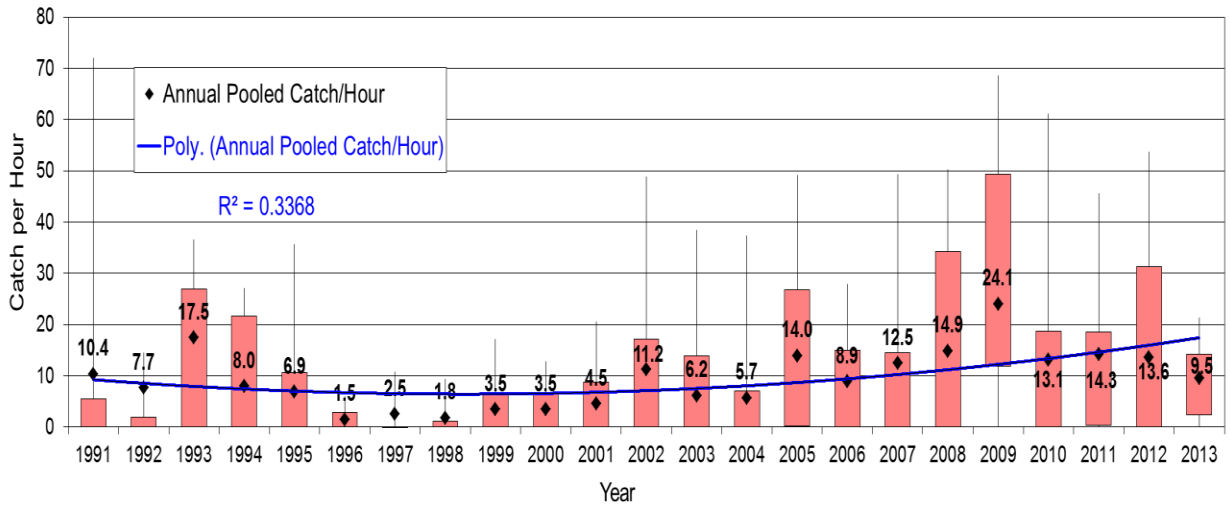
As sampled in 2012 and 2013, largemouth Bass populations across the Ouachita NF are at suitable and sustainable levels and their viability is not in question.

Redear Sunfish *(Lepomis microlophus)*

For additional information, contact Richard Standage at (501) 321-5202

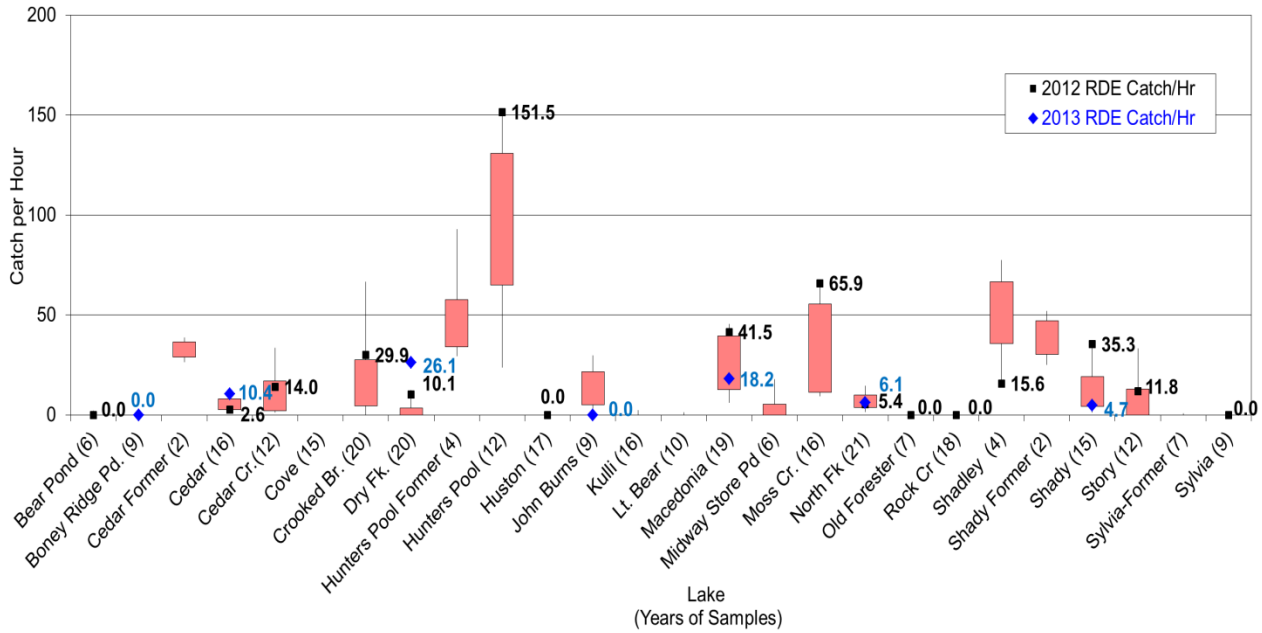
The Redear Sunfish electrofishing catches have ranged from four to 90 times less than bluegill or largemouth Bass catches over the past 23 years. As shown in the graph below, the catch in 2012 and 2013 for Redear Sunfish displays a large of variance in catch per hour. While the Redear Sunfish annual pooled catch rate trend line shows an increase since 1998, the trend is not statistically significant.

Annual Pooled Redear Sunfish Catch per Hour



The 2012 Redear catch was dominated by the catch of 151.5 Redear per hour at Hunters Pool and 65.9 Redear per hour Moss Creek Road Pond as shown in the figure below. This significantly added to that variance seen for 2012. Less variability in 2013 is most likely attributed to the decreased number of lakes and ponds sampled.

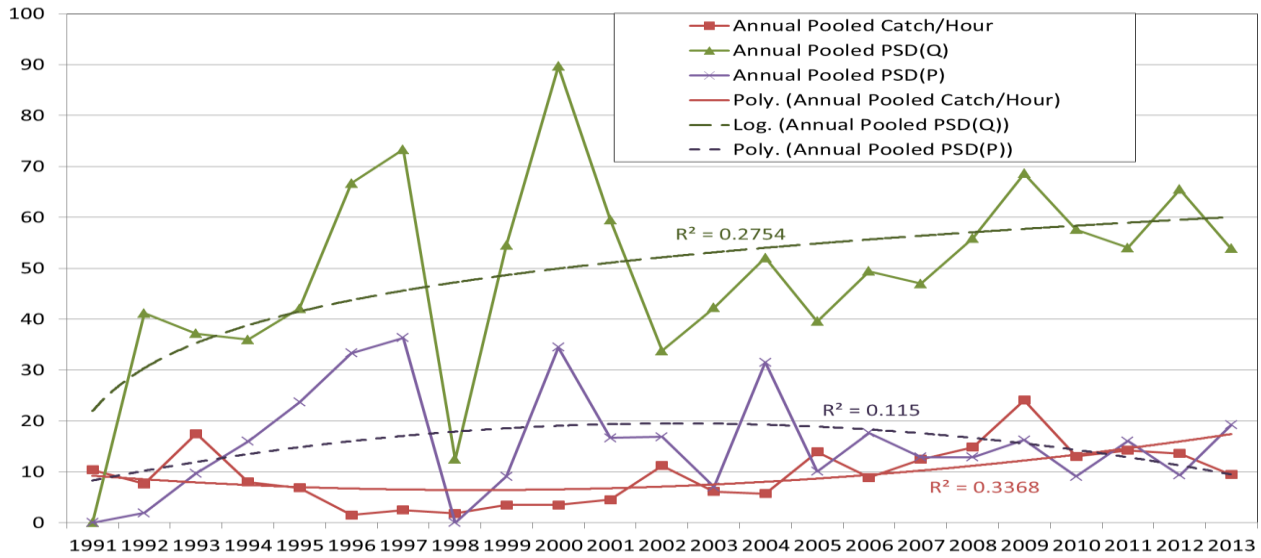
Redear Sunfish Catch per Hour by Lake



Harvestability of Redear Sunfish utilizes a stock length of 100 mm (3.9 inches) and a quality length of 180 mm (7.1 inches). Preferred sized Redear Sunfish are 230 mm or 9 inches and greater. The 2012 catch of Redear Sunfish quality and preferred sized surpassed that of the 2013 catch which was more similar to those sizes caught in 2011. The trend lines are not statistically significant for the catch per hour nor the quality or the preferred sized redears. Most of the lakes with high harvestabilities had very low catch rates for redears. The Forest

continues to work with the AGFC to establish Redear Sunfish in a few more of the lakes in the Fourche LaFave watershed.

Quality and Proportional Size Distribution for Redear Sunfish by Year



As sampled in 2012 and 2013, 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 Richard Standage at (501) 321-5202

In addition to the pond, lake, and waterhole MIS species, some 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. For 2012 and 2013, additional monitoring for white crappie, gizzard shad, and threadfin shad was conducted due to angler interest in crappie, and concerns over shad population expansions.

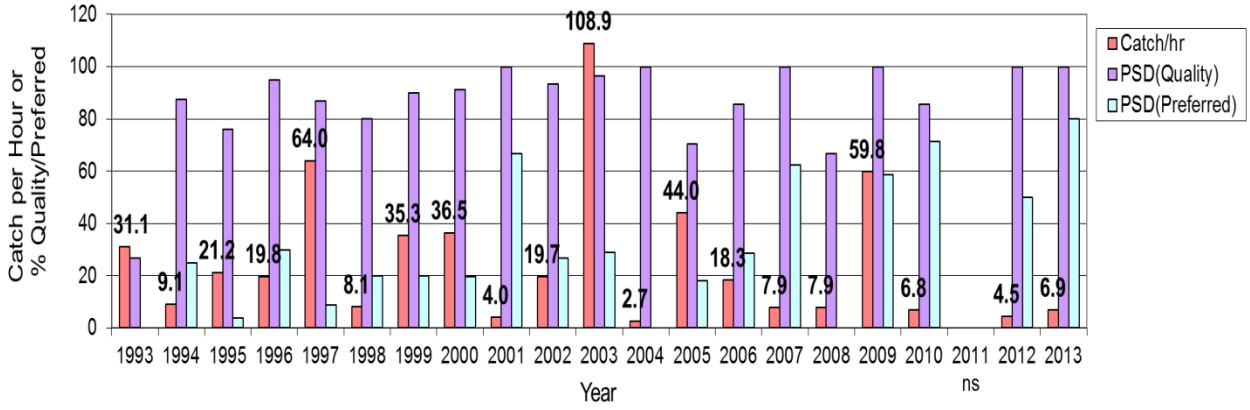
White Crappie *(Pomoxis annularis)*

For additional information, contact Richard Standage at (501) 321-5202

In addition to the previous three lake and pond species tracked Forest-wide, the White Crappie population in Dry Fork Lake has been tracked due to anglers' interest in the species at this particular lake. Crappie populations in the rest of the Ouachita NF waters are not nearly as large, thus this species is not a Forest-wide MIS. The population in Dry Fork Lake is being tracked to follow its cyclic year classes. At times there is a pattern of low catch rates and high rates of harvestability of both quality (200 mm or 7.9 inches) and preferred (250 mm or 9.8 inches) sized crappie followed some years later by a high catch rate and lower harvestability of the preferred sized crappie.

The 2012 and 2013 samples are of such low numbers of White Crappies caught that any conclusion may be of little value. However, the catch rate for 2012 and 2013 are similar to that of 2001, 2004, 2007 and 2008 with the harvestability fairly similar those years also. The pattern of low catch rates and high harvestability seems to be holding.

Catch Rates and Quality and Proportional Size Distribution for White Crappie by Year at Dry Fork Lake.



Gizzard Shad *(Dorosoma cepedianum)*

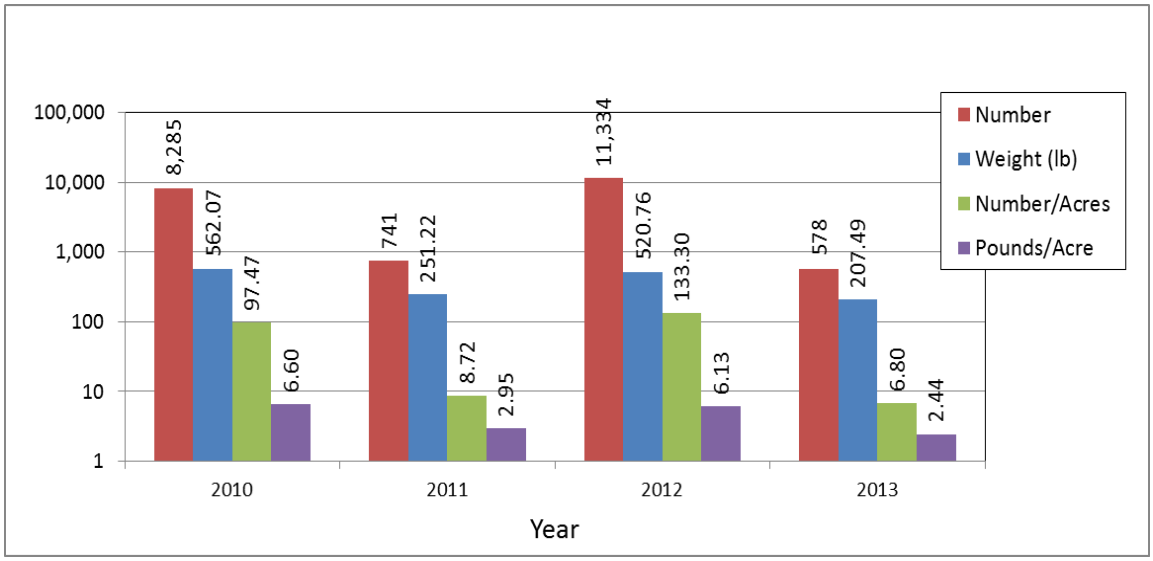
For additional information, contact Richard Standage at (501) 321-5202

Gill netting was first conducted in the fall of 2005 in Cedar Lake to monitor the Gizzard Shad population, due to concern that the Gizzard Shad population might be expanding and could impact sport fishing. Two new 200-foot monofilament nets, sized specifically to capture these shad and minimize Bass catches were utilized in 2006 for the first time and their use has continued through 2013. The Gizzard Shad length frequencies, as shown in the graph below, indicate three year/size classes were caught in the nets in 2006, three or more in 2007; only two year classes caught in 2008 and 2009; and four year classes or at least distinct lengths caught in 2010 and three to as high as five size classes caught in 2011 and 2012 with four in 2013. The capture of smaller Gizzard Shad from the fall of 2007 spawn may well be the result of the lake refilling later in the spring and triggering an additional late spawn by the shad. That portion of the 2007-year class appears to be missing in the 2008 and 2009 netting catch. The results in 2010 are more like a composite of the all of the results to date in that four distinct sizes of Gizzard Shad were caught. The 2011 and 2013 results showed a smaller sized Gizzard Shad caught, the next size class was missing (2 size classes missing for 2013) and the numbers caught of the larger-sized Gizzard Shad were fairly low in 2011, 2012 and lower yet in 2013.

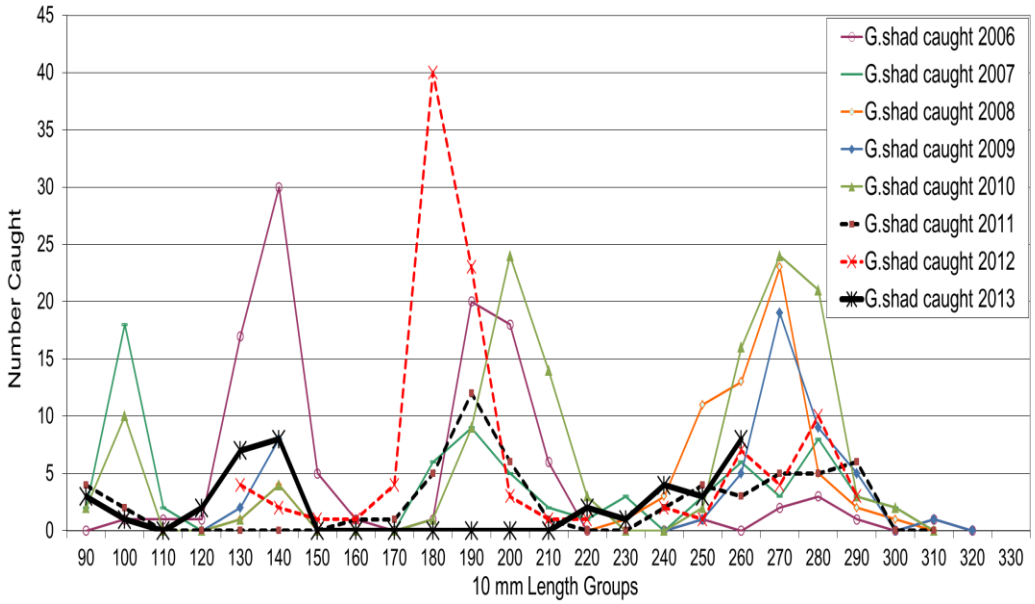
After review of the 2009 results, in consultation with the Oklahoma Department of Wildlife Conservation ODWC); it was decided that the Gizzard Shad population needed to be reduced in order to try to induce more reproduction/recruitment of smaller sizes and reduce the number of individuals in the population that were too large to serve as forage for the largemouth Bass and crappie in the lake. In one day of electrofishing in 2010, using both the ODWC electrofishing

boat with crew and the Forest's boat with crew followed by another work-day of only the Forest Service boat and crew, approximately 562 pounds of Gizzard Shad, numbering about 4,100 individuals were removed. This amounted to approximately 97.5 individual shad per acre or 6.6 pounds of shad removed per acre. This removal may have resulted in the netting of the extra small size class of Gizzard Shad that hadn't been recorded since 2007. This removal work has continued with various quantities of Gizzard Shad removed (see below) but showing fall netting results of more numerous smaller shad most years.

Cedar Lake Gizzard Shad Removals

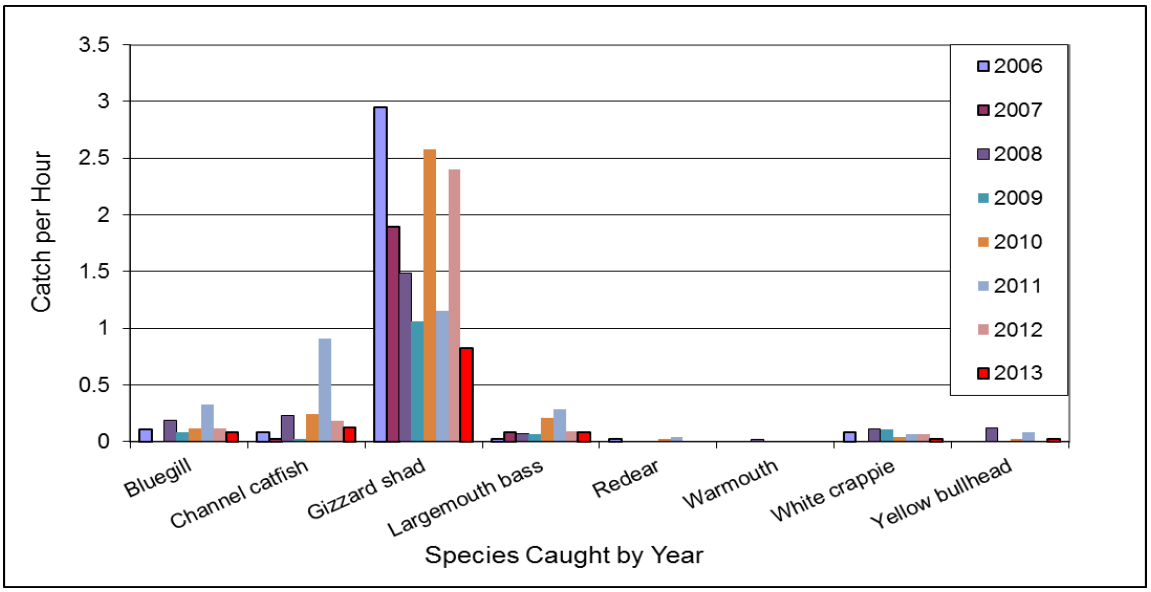


Cedar Lake Gizzard Shad Length Frequencies from Gill Nets (2) for 2006 - 2013



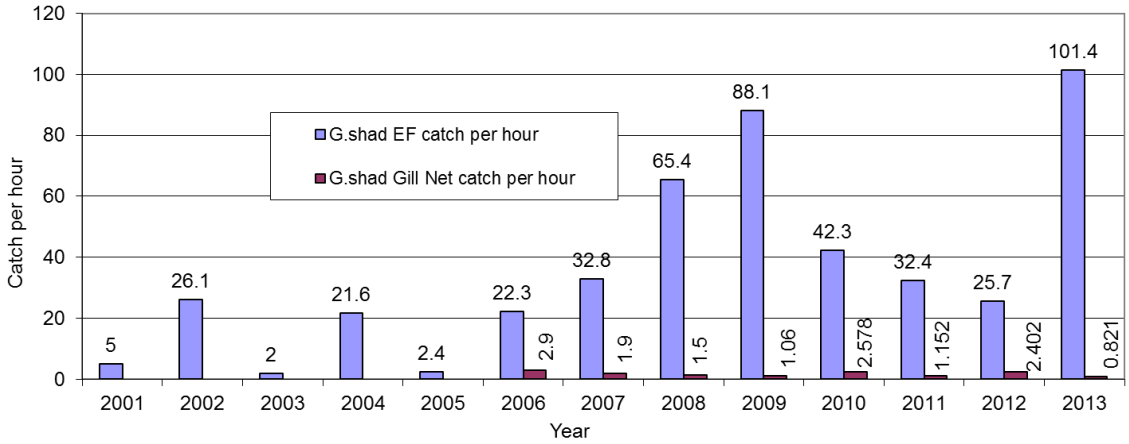
The gill net catch per hour for Gizzard Shad in 2013 is the lowest at Cedar Lake and is very low for the non-targeted species (see graph below).

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



More indicative of a potential problem is the comparison of spring electrofishing catch of generally larger Gizzard Shad compared to the gill net capture of the smaller year classes of Gizzard Shad. While the spring electrofishing Gizzard Shad catch in 2012 is not as high as that in 2008 and 2009, the 2013 electrofishing catch is the highest to date. The gill net catch is the third highest in 2012 and the lowest in 2013 in spite of the spring Gizzard Shad removals. The high catch of Gizzard Shad in 2013 electrofishing were 10-12 inch shad ready to spawn and they were congregated against the shoreline where they were more susceptible to electrofishing capture.

Cedar Lake Electrofishing Capture versus Gill Net Capture



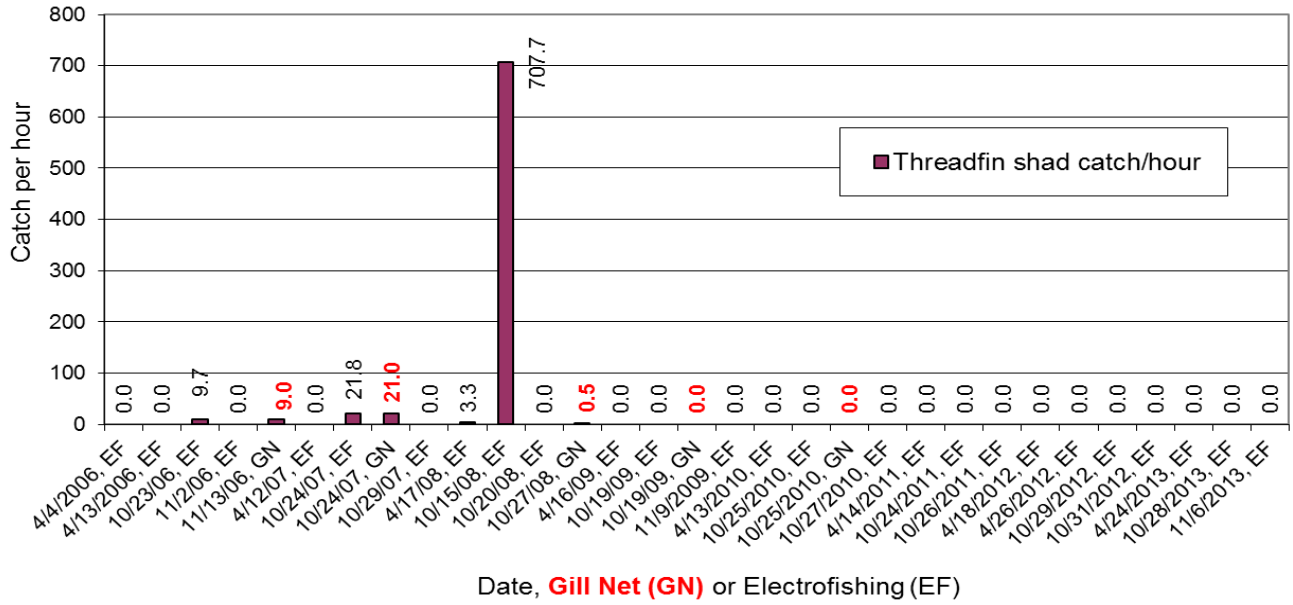
The electrofished Gizzard Shad are generally too large to be consumed by all but the very largest Bass and channel catfish in Cedar Lake. Based on these results, it appears the large shad should continue to be targeted with a reduction program to promote production of the smaller Gizzard Shad with the work started with the Oklahoma Department of Wildlife Conservation continuing as long as results seem worth the effort. 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.

Threadfin Shad *(Dorosoma petenense)*

For additional information, contact Richard Standage at (501) 321-5202

During fall electrofishing of North Fork Lake in 2006, threadfin shad were discovered. Two, 200 foot monofilament nets were set in North Fork Lake to assess the shad population size and structure. The two nets were fished 44 total hours capturing fish smaller and larger than those electrofished. Data indicate that there were at least two year classes present. Stocking records were checked by the Arkansas Game and Fish Commission and it appears highly unlikely these shad came from their hatchery system leading to the speculation that the threadfin shad were stocked in North Fork Lake by the public. The lake was sampled with two gill nets in 2007 through 2010, with them set in the same locations and for 47 hours combined fishing time in 2007, 49.5 hours in 2008, 50.25 hours in 2009, and 47.5 hours in 2010. Results show a higher catch per hour of threadfin shad in FY 2007 than what was caught in 2006, a very low catch in 2008 and none caught in 2009 through 2010. Gill netting was stopped at that point.

North Fork Lake Electrofishing and Gill Netting for Threadfin Shad



With no threadfin shad showing up in two gill nets and three electrofishing samples in 2009, none with the same effort in 2010 and none seining and during multiple electrofishing samples in 2011, 2012 and 2013; it appears the threadfin shad have likely died out. Threadfin shad are intolerant of water temperatures below 52 degrees and the past cold winters of 2008 and 2009 may have been sufficient in eliminating them. The other possibility is that the population of threadfin shad is so small that they are below detectable levels with the gear used and sample duration but giving the number of sampling events and different sampling methods, this seems an unlikely scenario. North Fork Lake will continue to be seined and electrofished at least annually. Additional gill net sampling will not be conducted unless threadfin shad should appear in electrofishing or seining samples again.

Shoreline Seining

For additional information, contact Richard Standage at (501) 321-5202

Shoreline seining was conducted in, or at least attempted, in approximately 34 lakes and ponds across the Ouachita NF in 2012 and 2013. Adequate reproduction was found for Sunfish and Bass in most of the waters that were easily seined. Difficulties in pulling seines were encountered and noted at several ponds, most of which also had low numbers of Bass young. In these cases, the results are more indicative of the ability to seine versus inadequate reproduction. Results also seemed to vary based on the week of sampling. Those lakes and ponds sampled later in June had a lower Bass catch in relation to Sunfish catches which may have indicated the Bass had grown large enough to out swim the seine. However those lakes sampled very early in June had almost no catches of Bass or Sunfish fingerlings and had to be resampled when the fingerlings were actually big enough to be captured and not go through the seine. Reliable seining results are an issue of timing which seems like it is becoming more unpredictable these past few years with greater fluctuations with hot and cold temperatures in the spring.

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

For additional information, contact Richard Standage at (501) 321-5202

Summary of Pond, Lake, and Waterhole Management Indicator Species Monitoring

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, 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**

Additional monitoring for White Crappie, Gizzard Shad, and Threadfin Shad was conducted during 2012 and 2013 even though these are not MIS species. The White Crappie population in Dry Fork Lake is monitored because it has been the largest crappie population on the Ouachita NF. Gizzard Shad in Cedar Lake are monitored to determine if the population is expanding. Threadfin Shad were discovered in North Fork Lake during 2006 electrofishing efforts. The 2010 gill netting and three electrofishing samples that year captured no Threadfin Shad and none were caught in the spring shoreline seining so gill netting the lake was discontinued. Monitoring for threadfin shad in North Fork Lake will only be by shoreline seining in the spring

and spring and fall electrofishing at this time, but gill netting will be added at any time should the threadfin shad reappear in any sampling. Sampling in 2011 through 2013 has not resulted in any further capture of Threadfin Shad.

In the fall of 2012, Dr. Stoeckel from Arkansas Tech University brought his Fisheries Techniques class to Dry Fork Lake to instruct them in shoreline seining and electrofishing. Their seining and two of three electrofishing runs were conducted before dusk with the third electrofishing run taking place from dusk into nightfall. Their electrofishing catch per hour for Largemouth Bass was nearly 5 times greater than the Forest's spring daylight sample. Their Bluegill catch was nearly 10 times greater and their Redear Sunfish catch was nearly 4 times greater than the Forest's. However, their harvestability for Largemouth Bass was about half of the Forest's, Bluegill harvestability was 1.5 times greater for the fall sampling, and Redear Sunfish harvestability was nearly the same between the spring and fall samples between ATU's and the Forest's samples. The class, from their data, caught significantly more small Bass, which were likely yearlings, given the lower harvestability of the Bass. Pretty much the same follows for the Bluegill. Of the data collected, Redear Sunfish data, even given the fact that the ATU class conducted some nighttime sampling, was the most similar to that of the Forest's spring daytime sample. The length/weight relationships for both electrofishing samples were quite similar. With the ATU and Forest's electrofishing control boxes not being the same models and the daytime verse nighttime samples; it would be expected that the ATU sample would be larger, with more fish venturing out under cover of darkness, particularly the smaller ones. Dr. Stoeckel and the Forest Fisheries Biologist hope to continue this dual sampling and are working on developing a more similar data reporting program to help in the comparison of these two data sets in the future.

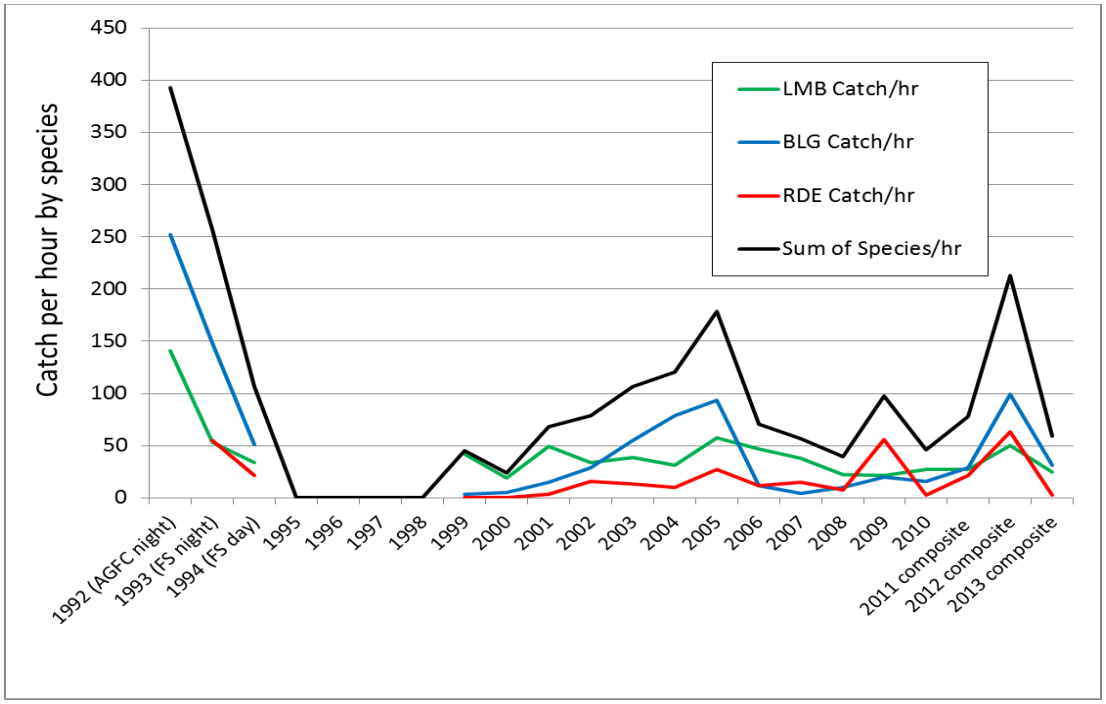
Additionally in 2012, the ODWC sampled Cedar Lake, Oklahoma for mercury analysis taking Channel Catfish (8), Largemouth Bass (13) and White Crappie (7). Only Largemouth Bass had levels of mercury (0.53 ppm) high enough to trigger an Advisory. Only 2 meals of Largemouth Bass per month are advised for pregnant or nursing women, women of child bearing age and children younger than 15 years of age. Consumption advisories occur for many of the lakes across the Forest due to natural weathering of mercury from the parent rock of the Ouachita Mountains combined with airborne sources.

Pond, Lake, and Waterhole Fisheries Operations

For additional information, contact Richard Standage at (501) 321-5202

Shady Lake was drained during the winter of 2009 that prompted an analysis of the electrofishing catch of the three MIS species. Upon further investigation, it was found the Ranger District was routinely draining or nearly draining the lake to accomplish swimming beach maintenance. This practice was contrary to the Operations and Maintenance Plan for the lake adopted in 1999 that provided for lowering the lake level no more than 50% during the winter to maintain the fishery and still provide the necessary draining and drying of the substrate to facilitate swimming beach maintenance. After discussions with the District Ranger and staff, this practice of draining or nearly draining the lake was halted and operations reverted to the Operations and Maintenance procedure as followed in the past. In the meantime, recovery in the catch per hour for the three species showed an improvement except in 2013. In review of the specific Shady Lake electrofishing data for 2013 spring and fall, an extraordinarily small catch was made in the spring of 2013 as the lake was too cold for the three species to be in shallower water and more vulnerable to electrofishing capture. The fall sample, while better, was insufficient to bring the pooled catch up significantly.

Shady Lake Catch per Hour for MIS Species



Stream and River MIS

For additional information, contact Betty Crump (501) 321-5202

There are 14 species of fish associated with stream and river habitat. Monitoring and MIS analysis for 12 species is conducted every five years utilizing a Basin Area Stream Survey along with annual data from long-term permanent stream monitoring sites. Johnny and Channel Darters data 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 Survey (BASS)

For additional information, contact Betty Crump at (501) 321-5202

Every 5 years, the watershed condition is evaluated to determine if the progress in condition ratings has occurred through the paired-stream Basin Area Stream Survey (BASS). The BASS data gathered includes biological (fish and aquatic macroinvertebrate surveys), morphological (physical measurements of stream reaches), and limnological (water chemistry). A Forest-wide BASS was completed in FY 2011. The data has been reviewed and has been placed into the Forest BASS database. Analysis is scheduled to begin early FY 2015.

Arkansas River Valley Stream MIS

For additional information, contact Betty Crump at (501) 321-5202

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

Arkansas River Valley Stream MIS, ONF	
Highland (Central) 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***

Results for these species are reported along with Basin Area Stream Surveys.

Gulf Coastal Plain Ecoregion Stream MIS

For additional information, contact Betty Crump at (501) 321-5202

There are twelve fish species identified as MIS for the Gulf Coastal Plain Ecoregion Streams.

Creek Chubsucker	***Erimyzon oblongus***
Highland Stoneroller	***Campostoma spadiceum***
Green Sunfish	***Lepomis cyanellus***
Longear Sunfish	***Lepomis megalotis***
Orangebelly Darter	***Etheostoma radiosum***
Northern Studfish	***Fundulus catenatus***
Northern Hog Sucker	***Hypentelium 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 types of fish: the Highland Stoneroller, Green Sunfish, Longear Sunfish, and the Redfin Darter are common to both groups: Arkansas River Valley Streams and the Gulf Coastal Plain Streams. Results for these species are reported along with Basin Area Stream Surveys.

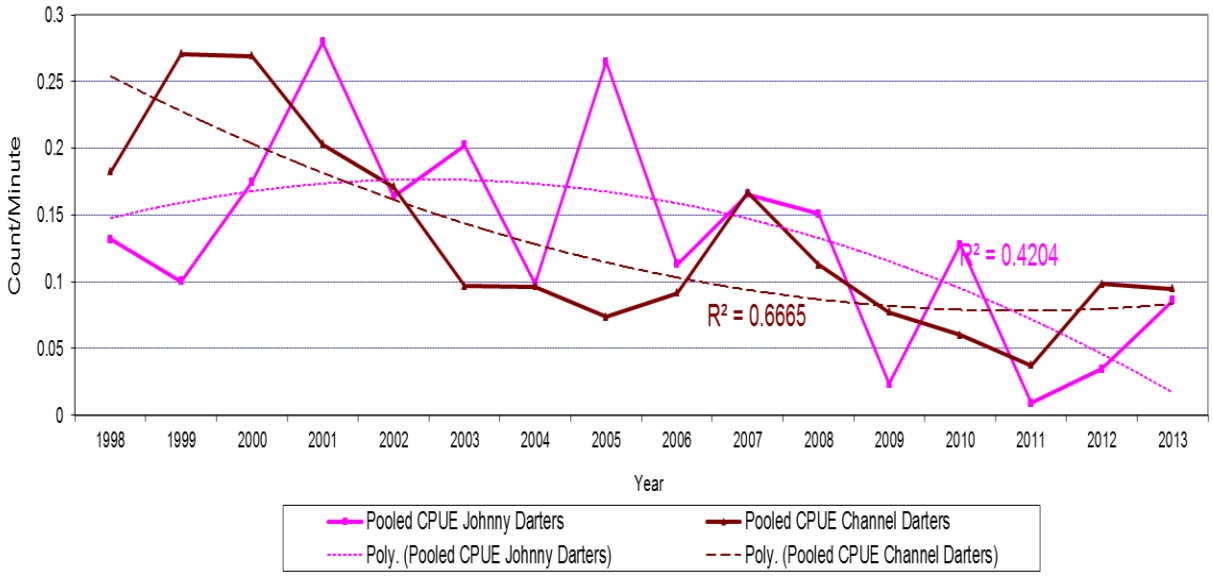
Johnny and Channel Darters *(Etheostoma nigrum and Percina copelandi)*

For additional information, contact Richard Standage at (501) 321-5202

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 to species. Snorkeling of each transect is conducted by an experienced five-member crew.

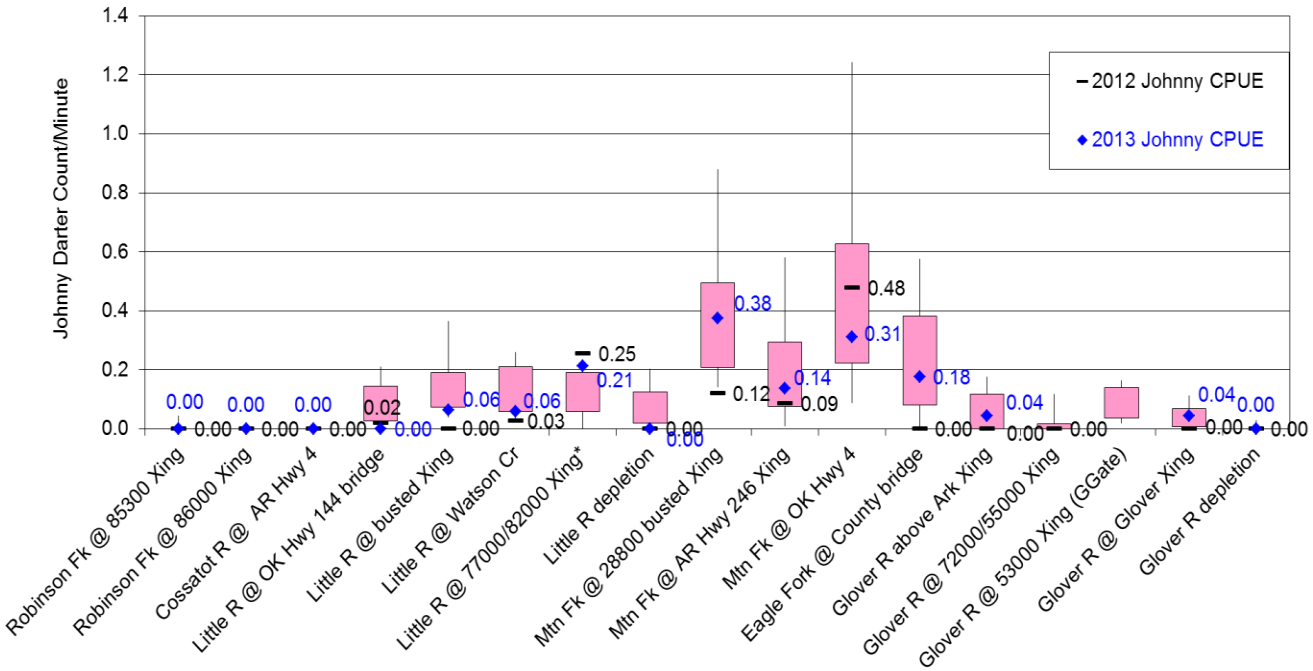
Johnny Darters: Johnny Darters are more typically found over gravel and sand substrates; much finer substrates than the Channel Darter's preference for cobble and boulder substrates. Shifts in species distribution have been compared to shifts in substrate observations in an effort to establish a relationship. However, after examining the variability in the numbers of the two species at the individual sites over many years, it is not possible to draw a direct correlation. It is suspected that there are more influences than just substrate differences occurring at the site, drainage and regional/climatic levels. The winter of 2004/2005 had fewer and smaller flushing storm events than normal, 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. Both species show recovery in 2007, particularly Channel Darters, possibly as the results of continuing improvement in spawning conditions with the flushing flows. In 2008 there were a number of flushing flows in February through early April that may have flushed eggs and larval Darters out of ideal hatching and rearing habitat resulting in lower population levels the summer of 2008. In the winter of 2008/2009 there were even more significant storms through the spring of 2009 that were highly likely of flushing eggs and larvae out 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 Darters from prior years. While the winter of 2011 was fairly mild without much flooding, high rains and flooding occurred in April and May followed by the 6th worst drought since 1921. Overall trend lines for Johnny and Channel Darters show a downward trend but only the trend line for the Channel Darter is statistically significant and that significance is extremely low.

Johnny and Channel Darter Annual Pooled Counts per Minute



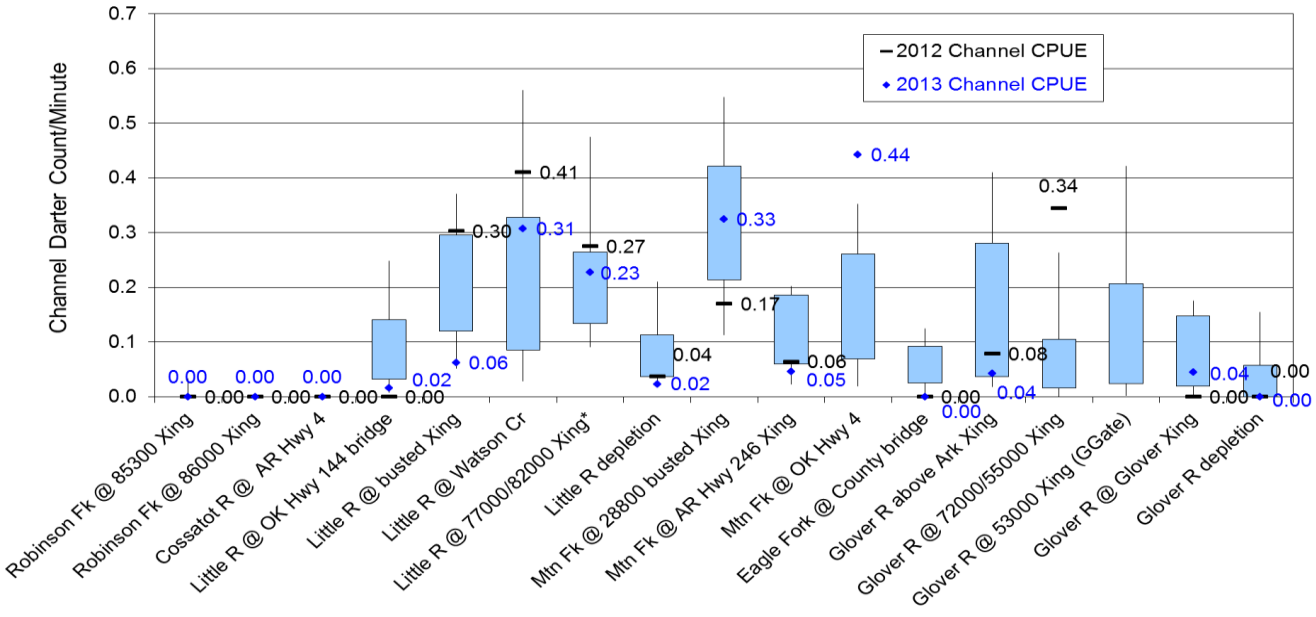
Johnny Darter counts were generally quite low in 2012 with some improvement in 2013. Both years were extremely dry, especially 2012 during the time of the snorkel surveys. Both years had numerous high water events during the winter through the spring. Three sites in 2012 were lower than the 10-90% variance limits for those sites. 2013 counts for all sites are each within their 10-90% variance limits.

Johnny Darter Counts per Minute by Site



Channel Darters: For channel Darters in 2012, most counts were higher than site counts for the Darter in 2013, the reverse of the situation for Johnny Darters. The Mountain Fork River snorkel site upstream of the OK Highway 4 Bridge was rained out and too muddy in 2012 but in 2013 the count at the site was well in excess of the 90th percentile of past counts. This site historically has had much higher counts of Johnny Darters but in 2013 the count of Channel Darters surpassed that of Johnny Darters. All 2012 counts for Channel Darters were higher than those at their respective sites in 2013 other than the counts in 2013 in the Mountain Fork at both the OK Highway 4 Bridge and the Arkansas Highway 246 Bridge.

Channel Darter Counts per Minute by Site



While the trends for both Johnny and channel Darters look rather bleak, it is believed to be a result of the frequent and high intensity flooding of 2008/2009 with limited rebound in 2010 which was a good water year. High flows were experienced in April and May of 2011-2013 during juvenile growth periods followed by droughts with low water conditions. 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 did in 2010. Based on historic trends, the populations appear to fluctuate frequently with periods of population numbers expansion and contraction. Channel Darter pooled counts have been low before (2005) and rebounded for two years, and the Johnny Darter pooled count for 2009 is the lowest in the thirteen years sampled and then made a sizeable rebound in 2010 but dropped again in 2011 with rebounds in 2012 and 2013 (though counts these two years may be a reflection of low water and higher than normal water clarity). Fluctuating populations may be the norm for these two species as with the Leopard Darter.

Summary of Stream and River Management Indicator Species Monitoring

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					
Creek Chubsucker	(*Erimyzon oblongus*)	Stable	Stable	Sustainable – Viability not in Question	None
Highland Stoneroller	(*Campostoma spadiceum*)	Stable	Increasing	Sustainable – Viability not in Question	Manage OHV use, maintain roads and trails
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
Orangebelly Darter	(*Etheostoma radiosum*)	Stable	Potentially Decreasing	Sustainable – Viability not in Question	Manage OHV use, maintain roads and trails
Northern Studfish	(*Fundulus catenatus*)	Stable		Sustainable – Viability not in Question	None
Northern Hog Sucker	(*Hypentelium nigricans*)	Stable	Stable	Sustainable – Viability not in Question	None
Pirate Perch	*(Aphredoderus sayanus)*	Stable	Stable	Sustainable – Viability not in Question	None
Redfin Darter	*(Etheostoma whipplei)*	Stable	Stable	Sustainable – Viability not in Question	None
Smallmouth Bass	*(Micropterus dolomieu)*	Stable	Stable	Sustainable – Viability not in Question	None
Striped Shiner	*(Luxilus chrysocephalus)*	Stable	Stable	Sustainable – Viability not in Question	None
Yellow Bullhead	(*Ictalurus natalis*)	Stable	Declining	Sustainable – Viability not in Question	Manage OHV use, maintain roads and trails
Johnny Darter	*(Etheostoma nigrum)*	Normally fluctuating	Relatively Stable	Sustainable – Viability not in Question	None
Channel Darter	*(Percina copelandi)*	Normally fluctuating	Potentially Decreasing	Sustainable – Viability not in Question	Unknown

Connectivity of Fish Habitat

For additional information, contact Richard Standage at (501) 321-5202

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 this desired condition and Forest Plan objective, the Forest completed 11.5 miles of improved fish passage at four crossings and stabilized 145.8 miles of stream habitat. Three failing road crossings were replaced with aquatic organism passage-friendly structures. The 145.8 miles of stabilized stream habitat was the result of replacing one arch crossing that was being undermined but still provided fish passage and the remaining mileage was from heavy maintenance on hundreds of miles of roads and OHV trails to decrease sediment movement into streams.

The desired condition for game fish habitat in the 2005 Forest Plan is as follows: *"Fishable waters support high-quality angling opportunities," and* Objective 27 states, "*Maintain recreational fishing opportunities of stocked lakes and ponds."* In 2011, additional fish sampling was continued to monitor the gizzard shad population at Cedar Lake, and control measures were again undertaken as it appeared the gizzard shad population has begun to impact game fish populations negatively in Cedar Lake. Habitat for game fish and recreational opportunities for fishing are being protected, enhanced, or maintained by: monitoring of Bass and Sunfish spawn with supplemental stocking requested from the state as needed. Structural habitat improvements (fish attractors/cover) are added to increase fish cover. 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 fish populations of Ouachita NF lakes and select ponds. Annual channel catfish stocking continued in most managed recreational fishing waters in close coordination with the fish and game agencies of each state.

Cedar Lake, within the Ouachita NF Cedar Lake Recreation Area, has produced two recent state records for Largemouth Bass. The first consisted of a 14 pound 12.3 ounce Largemouth caught by Benny Williams, Jr. on March 23, 2012 making it the new State Record Largemouth. Almost a year later the current state record Largemouth, a 14 pound 13.7 ounce Bass was caught by Dale Miller on March 13, 2013.

2012 Oklahoma state record Largemouth
14 lb. 12.3 oz.
caught 3/23/2012 by Benny Williams, Jr.

Current Oklahoma State Record Largemouth
14 lb. 13.7 oz.
caught 3/13, 2013 by Dale Miller

The current state record Largemouth Bass from Cedar Lake was aged at 11 years old, which suggests that another year or two of life might be expected from these Bass. Producing state record Largemouth Bass in Cedar Lake has been a long-term effort of the Forest Service and the ODWC. This work will continue as long as funding and personnel are available. This may result in producing another new Cedar Lake state record Largemouth Bass for Oklahoma in the near future. Both Bass were full-blooded Florida-strain Largemouth Bass according to DNA testing.

R8 Sensitive and Other Aquatic Species of Viability Concern

For additional information, contact Betty Crump at (501) 321-5202

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, only the Quachita Darter is an aquatic species that is monitored on an annual basis. The Ouachita Slit Mouth Snail and Endemic Salamanders are also on the list but rarely monitored.

Ouachita Darter *(Percina sp. nov.)*

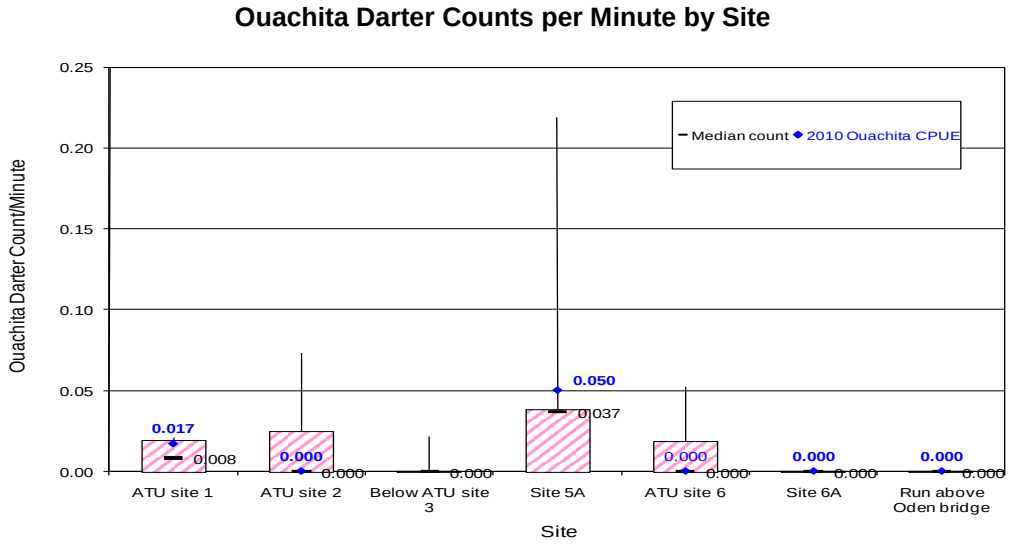
For additional information, contact Richard Standage at (501) 321-5202

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. 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 conducted in late summer/early fall during low flow conditions.

Ouachita Darter Source: Richard Standage, USFS

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 nineteen 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 by a graduate student from Arkansas Tech and his major professor. Work continued on the Stargazing Darter and the Ouachita Darter for the next two field seasons with the final report due in FY2014. Results indicated that while there are Ouachita Darters in the stretch the Ouachita NF is monitoring, larger populations are found further downstream particularly at and right above the backwaters of Lake Ouachita.

A Forest Service snorkel survey was not conducted in 2012 or 2013 due to flows being too low in the River to float a canoe through the stretch previously monitored and scheduling issues. Based on the Arkansas Tech surveys and Forest Service previous surveys, the Ouachita Darter population in this section of the river appears viable but may be declining. Continued monitoring will better assess the variability in its numbers in this section of the river and the monitoring efforts may be fine-tuned utilizing the latest results from the Arkansas Tech University study.



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

There are seven freshwater mussel species, one fish species, and one aquatic dependent plant species that are listed as federally threatened or endangered. Of the nine federally listed aquatic species, harperella carries the distinction of being the only endangered plant species.

Federally Endangered or Threatened Aquatic Species, ONF

Common Name	Scientific Name	Viability Concern Classification
Mussels		
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**

***Two mussel species have not been found to occur on the Ouachita NF within waters that are surveyed (winged mapleleaf and pink mucket).**

Listed Freshwater Mussels

There were no specific freshwater mussel surveys conducted on the Ouachita NF during FY 2012 or 2013. Researchers are currently investigating the limits and phytogeography of *Lampsilinae* in Arkansas with emphasis on species of *Lampsilis* (fatmucket). Mussel surveys will continue to be conducted, in conjunction with the Arkansas and Oklahoma USFWS aquatic specialists and the AGFC malacologist to provide information for the Arkansas fatmucket five-year status review. The species and numbers of all other mussel species encountered will also be noted during the next survey which is on-going.

Pink Mucket (*Lampsilis abrupta*) and Winged Mapleleaf (*Quadrula fragosa*)

For additional information, contact Betty Crump at (501) 321-5202

Many of the streams and rivers within the Ouachita NF have been surveyed for freshwater mussel species diversity as well as relative abundance. The federally endangered pink mucket mussel and the winged mapleleaf freshwater mussel have not been found to occur in any of the surveyed waters. There are no records that show that the pink mucket and winged mapleleaf mussels have ever occurred within the Forest's waters; however, the winged mapleleaf is found just upstream of the Ouachita NF in the Little River. These species will remain on the viability concern list, and survey efforts will continue. Any occurrences will be reported to the USFWS. Otherwise, provision for protection of aquatic habitat will follow the streamside management area direction.

Scaleshell Mussel (*L. leptodon*)

For additional information, contact Betty Crump at (501) 321-5202

The South Fourche La Fave River is dominated by a few widely distributed and abundant species. The only scaleshell mussel record from this river is a single, live specimen found in

1991, and a second survey of the site in 2001 did not located specimens of this species. The potential of additional mussel populations is unlikely due to the limited availability of suitable substrate. Similarly, other major tributaries of the South Fourche La Fave River provide little opportunity for mussel occurrence; therefore, persistence of scaleshell mussel in this river is in doubt.

Although not found within the Forest boundary in Oklahoma, populations of the freshwater scaleshell mussel are known to occur along with populations of the Ouachita Rock Pocketbook in the Kiamichi River in Oklahoma, and Little River systems in Oklahoma and Arkansas. The potential for occurrence in Arkansas as well as Oklahoma, along with the federally endangered status makes this a species of viability concern for the Ouachita NF.

Ouachita Rock-pocketbook (*Arkansia wheeleri*)

For additional information, contact Betty Crump at (501) 321-5202

Populations of this freshwater mussel are known to occur in the Kiamichi River 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. Protocols for this species will be the same as the other mussels that are known to occur within the Forest's waters.

Ouachita Rock-pocketbook
Source: USFWS

Spectaclecase (*Cumberlandia monodonta*)

For additional information, contact Betty Crump at (501) 321-5202

The Spectaclecase is a freshwater mussel that the U.S. Fish and Wildlife Service listed as an endangered species. Identifying, protecting and restoring aquatic habitat are primary objectives of the Forest Service's management program. A single half-shell relict was found near Dragover Access on the Ouachita River in 1991. After multiple searches since then, the Spectaclecase is considered by the mussel experts in AR to be extirpated from the Ouachita R. above Lake Ouachita. Population losses due to dams have contributed more to the decline and potential extinction of the Spectaclecase than any other factor.

A young and a mature spectaclecase
Source: USFWS; Nick Rowse

Dams affect both upstream and downstream populations by disrupting seasonal flow patterns, scouring river bottoms, changing water temperatures and eliminating river habitat. Large rivers

throughout nearly all of the Spectaclecase mussel's range have been dammed, leaving short, isolated patches of habitat between dams. Spectaclecase mussels likely depend on a fish species, or other aquatic species, to move upstream. Because dams block fish passage, mussels are also prevented from moving upstream. Effects to this species and its habitat will be analyzed for activities planned within the vicinity of Dragover.

Arkansas Fatmucket *(Lampsilis powellii)*

For additional information, contact Betty Crump at (501) 321-5202

The federally threatened 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 the frequency of detection and the population sizes have been consistently decreasing.

Arkansas Fatmucket
Source: USFS

In a 2007 Five-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. 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 NF and protective measures are coordinated through the USFWS whenever Forest activities may impact this species or its habitat.

Rabbitsfoot *(Quadrula cylindrica cylindrica)*

For additional information, contact Betty Crump at (501) 321-5202

The rabbitsfoot, a freshwater mussel, is a federally listed threatened species with proposed Critical Habitat. It is found in rivers and streams on the Ouachita NF. Estimates are that it has been lost about 64 percent of its historical range. While 51 of 140 historical populations are still present, only 11 populations are viable; 23 populations are at risk of extirpation and 17 populations do not seem to be reproducing at a level that can sustain the populations. Most of the existing rabbitsfoot populations are marginal to small and isolated. Significant habitat loss, range restriction, and population fragmentation and size reduction have rendered the rabbitsfoot vulnerable to extinction. Threats include exotic species, sedimentation; small population sizes; isolation of populations; livestock grazing;

Rabbitsfoot
Source: USFWS

wastewater effluents; mine runoff; unstable and coldwater flows downstream of dams; gravel mining; and channel dredging. Many of the remaining populations are isolated and may be eliminated by single catastrophic events, such as toxic spills. Natural repopulation is impossible without human intervention.

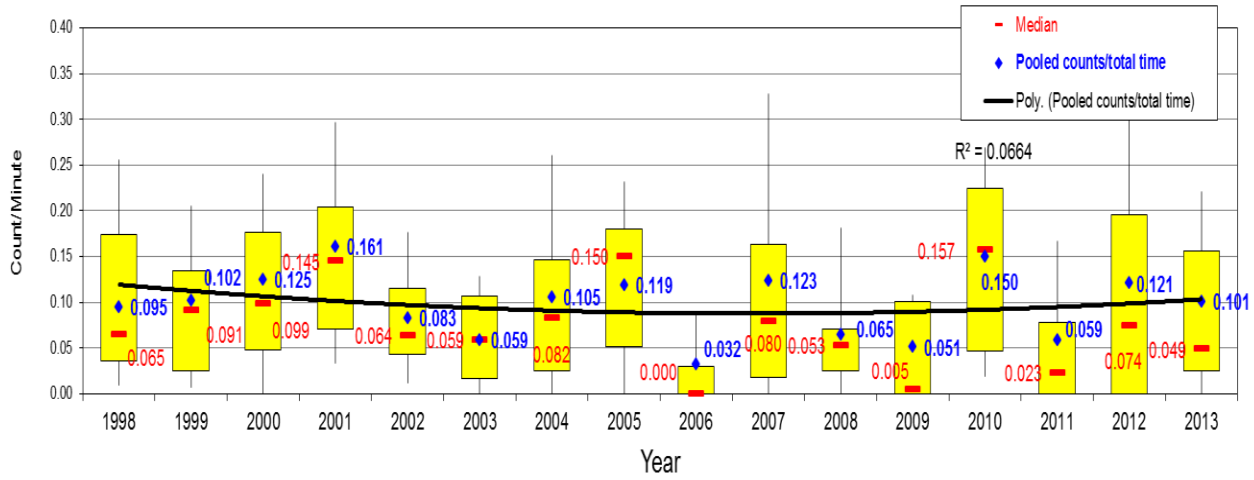
Conservation actions that may benefit rabbitsfoot are programs that support life history research and surveys and those that contribute to public understanding of the functions that rabbitsfoot and other mussels play in the environment. Ensuring that regulations designed to protect water quality and aquatic habitats are fully implemented is vital to maintaining or enhancing remaining rabbitsfoot populations. The federally listed threatened Rabbitsfoot freshwater mussel and it proposed Critical Habitat will be evaluated in every watershed project analysis for effects.

Leopard Darter (Percina pantherina)

For additional information, contact Richard Standage at (501) 321-5202

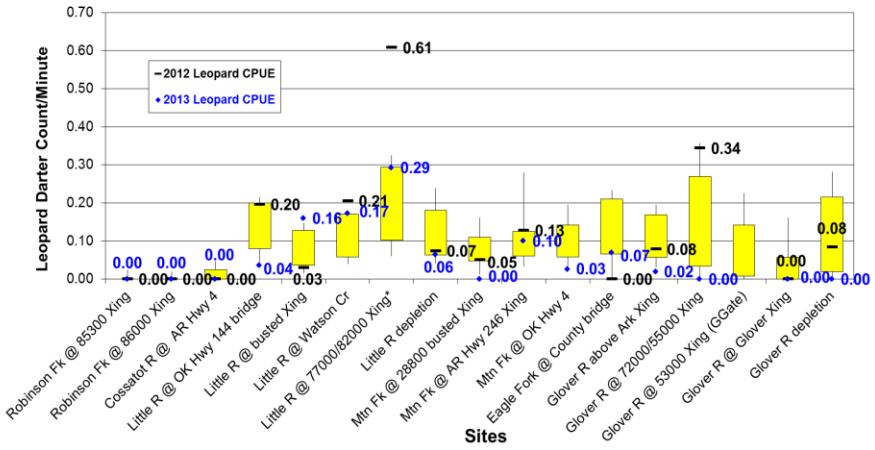
Leopard Darters in 2012 and 2013 had snorkel counts that were somewhat higher than those the summer of 2011. Leopard Darter counts in 2011 were nearly three times less than the counts from the summer of 2010 (the second highest counts) and only slightly higher than the summer of 2009 counts. From 1998 through 2007, there appeared to be a trend of a gradual four-year increase in pooled counts with a crash and restarting of this trend. However, the 2006 to 2007 increase was followed by a crash in 2008. It is theorized that the winter of 2007/2008 with its numerous storm events led to the poor recruitment of the 2008 year class of Leopard Darters and low counts the summer of 2008. Flooding during critical spawning and rearing periods was even worse during the 2008/2009 winter into spring 2009. It appears that 2010 was a good water year with good visibilities experienced at most sites and then in 2011 there was heavy flooding in April and May and a low water and hot summer (6th driest on record since 1921(from http://climate.ok.gov/index.php/drought/last -30-day/oklahoma_south-central_u.s.) that lead to the low pooled counts. (See discussion of storm responses in the Johnny and Channel Darter section later in this report.) It was observed and noted that low water and high water clarity was experienced during the surveys in 2012 and 2013 which could lead to higher counts with the greater visibility and with the low water levels in 2012 and to a lesser extent in 2013 that Leopard Darters were trapped and concentrated. The trend line for the annual pooled counts of Leopard Darters is not statistically significant.

Leopard Darter Annual Pooled Counts



The Robinson Fork population represents the only drainage area where all counts were zero; however, it has been typical to see no Leopard Darters at the two sites for several years and then to find one or two Leopard Darters the next year put possibly not in the transect where they would only be recorded as part of the pooled counts. The Cossatot River site also has zero Leopard Darters counted during the swim through the permanent transects fairly often, but Leopard Darters often are seen in non-transect areas. Each of these two off-forest populations is highly vulnerable to extirpation because of small drainage areas isolated above a reservoir. The Glover River site at the 53000 crossing was not sampled for the forth and fifth year in a row due to the change in the site from a pool to a steep riffle with the river channel restructuring itself after the low-water crossing, that was basically a low-water dam, was removed and replaced with a bridge.

Leopard Darter Counts per Minute by Site



Graph shows 17 of the 18 permanent monitoring sites. One Little River site has been inaccessible for the past three years.

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 its listing classification. It was recommended that the Recovery Plan be updated. Data presented here would indicate that the population is experiencing natural variations. There is a new perceived threat to its survival of inadequate genetic variation between and within populations. Delisting criteria as laid out in the draft recovery plan have not been achieved, so delisting is not an option at this time.

Harperella (*Ptilimnium nodosum*)

For additional information, contact Susan Hooks at (501) 321-5202

Harperella
Source: USFS

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*. Population levels at individual sites appear to vary greatly from year to year. Some of this variation is attributable to past population estimates being 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.

In 2012 two new locations for harperella were discovered on NF lands in Arkansas and in Oklahoma. The Fiddler Creek site got intensive monitoring due to a road construction project. These sites continued to have a population similar to past years. A portion of the Irons Fork population was monitored and populations appeared to be similar in numbers and areas previously occupied.

In 2013 Fiddler Creek sites were monitored and the population is considered stable. The Irons Fork population appeared to be down from previous years. There was one site that is adjacent to NF lands that was reported in previous years and having thousands of plants and in 2013 less than 20 plants were located during the survey. This could, however, be due to the previous year's drought conditions rather than management actions.

Other Aquatic Habitat Considerations

Game Fish Habitat

For additional information, contact Richard Standage at (501) 321-5202

The desired condition for game fish habitat in the 2005 Forest Plan is as follows: *"Fishable waters support high-quality angling opportunities."* Objective 27 states, "*Maintain recreational fishing opportunities of stocked lakes and ponds."* Habitat for game fish and recreational opportunities for fishing are being protected, enhanced or maintained by: monitoring of Bass and Sunfish spawn with supplemental stocking requested from the state as needed; structural habitat improvements (fish attractors/cover); fertilizing and liming to increase productivity and reduce excessive aquatic vegetation; access improvements; and annual to biannual electrofishing to monitor the adult fish populations of Ouachita NF lakes and select ponds. Annual channel catfish stocking continued in most managed recreational fishing waters in close coordination with the fish and game agencies of each state. In 2012 and 2013, 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 with shifting some of the Gizzard Shad biomass to smaller sized shad, more available for game fish consumption.

Aquatic Habitat Enhancement Activities

For additional information, contact Richard Standage at (501) 321-5202

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, five miles of improved fish passage at three crossings, and 61.5 miles of stabilized stream habitat resulted from FY 2012 work. Much of the sediment control came from heavy maintenance on OHV trails and replacement of a number of culverts and road maintenance after a prior flooding event. In FY 2013, three miles of fish passage were restored at three crossings and 40 miles of sediment reduction/control was accomplished, mostly funded with Federal Highway's flood restoration dollars.

Original Brushy Creek FDR 140 Crossing AOP blockage under high water.

Brushy Creek FDR 140 Crossing Replacement

The tabulation below displays a summary of all activities undertaken during the last six years to improve aquatic habitat.

Activity	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
	Acres or Units					
Lake Fish Attractors Installed	**48**	**73**	**40**	**48**	**16**	**0**
Stream Fish Structure/Fish Passage Restored (miles)	**11**	**20**	**14**	**11.5**	**5**	**3**
Fishing Pond/Lake Constructed	**1**	***1**	**0**	**0**	**0**	**0**
Fishing Pond/Lakes Enhanced/fertilized, limed, etc.	**558**	**474**	**548.5**	**696**	**702**	**593**

*One two-acre pond reconstructed due to the dam washing-out.

Amphibian Habitat

For additional information, contact Betty Crump at (501) 321-5202

No reports on amphibian habitat were available for the FY 2012 – FY 2013 reporting cycle.

Watershed Function and Public Water Supply

For additional information, contact Steve Cole at (501) 321-5202

Within 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."*
In addition, there is a specific Forest Plan objective that relates to watershed function: "*OBJ 14. Maintain or improve watershed health."*

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.

Herbicide Monitoring

For additional information, contact Steve Cole at (501) 321-5202

Three streams were monitored for the presence of herbicides (Imazapyr and Triclopyr) below treated stands. This is an ongoing monitoring program where 10 percent of areas treated with herbicides are monitored for off-site movement. Three sites were monitored on the Mena-Oden District. Lab results indicated that the presence of herbicides has been insignificant for all sites. No changes to the monitoring protocols are recommended; however more timely results of monitoring are desirable.

Recreation and Scenery Management

For additional information, contact Chris Ham at (501) 321-5202

Abundant opportunities exist for the public to use and enjoy the Ouachita NF. Areas or facilities include developed recreation sites, semi-primitive 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 recreational 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 Chris Ham at (501) 321-5202

There are six wilderness areas totaling approximately 64,469 acres located within the Ouachita NF, one with land in both Arkansas and Oklahoma (Black Fork Mountain Wilderness), four in Arkansas (Caney Creek, Poteau Mountain, Dry Creek, and Flatside), and one in Oklahoma (Upper Kiamichi). The six wilderness areas were congressionally designated in three separate acts, as shown below.

- 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 2005 Forest Plan. Lands adjacent to Flatside Wilderness (620 acres) and the 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 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 use and enjoyment of National Forest System lands, including conservation of opportunities for semi-primitive recreation settings.

The proposed Flatside Wilderness and Poteau Mountain additions in Arkansas and Upper Kiamichi Wilderness addition in Oklahoma are contiguous to existing wilderness boundaries, would increase visibility and ease 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.

These 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 public sponsor will be required to advance the recommendations through the system. No action was taken during FY 2012 and FY 2013 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. This is largely due to a vacancy in the Forest Wilderness Specialist position several years ago. The position remains vacant and is likely to remain vacant for the foreseeable future. Despite lack of progress on Wilderness

Management Plans, surveys of the Wilderness areas reveal that they are in reasonable condition due, primarily, to the general lack of recreation use.

Wilderness Stewardship Headwater Stream Sampling

For additional information, contact Judy Logan at (501) 321-5202 or Betty Crump at (501) 321-5202

The "Wilderness Stewardship Challenge" was instituted in 2004 to ensure that wildernesses are being properly managed to leave them unimpaired for present and future generations. Monitoring air quality values was identified as one of ten accountability elements in the Challenge. An air quality value (AQV) is simply a resource that can be affected by air pollution. An AQV is selected based upon relative sensitivity to pollution, value as an indicator of the natural conditions of the Wilderness Area and importance to wilderness visitors.

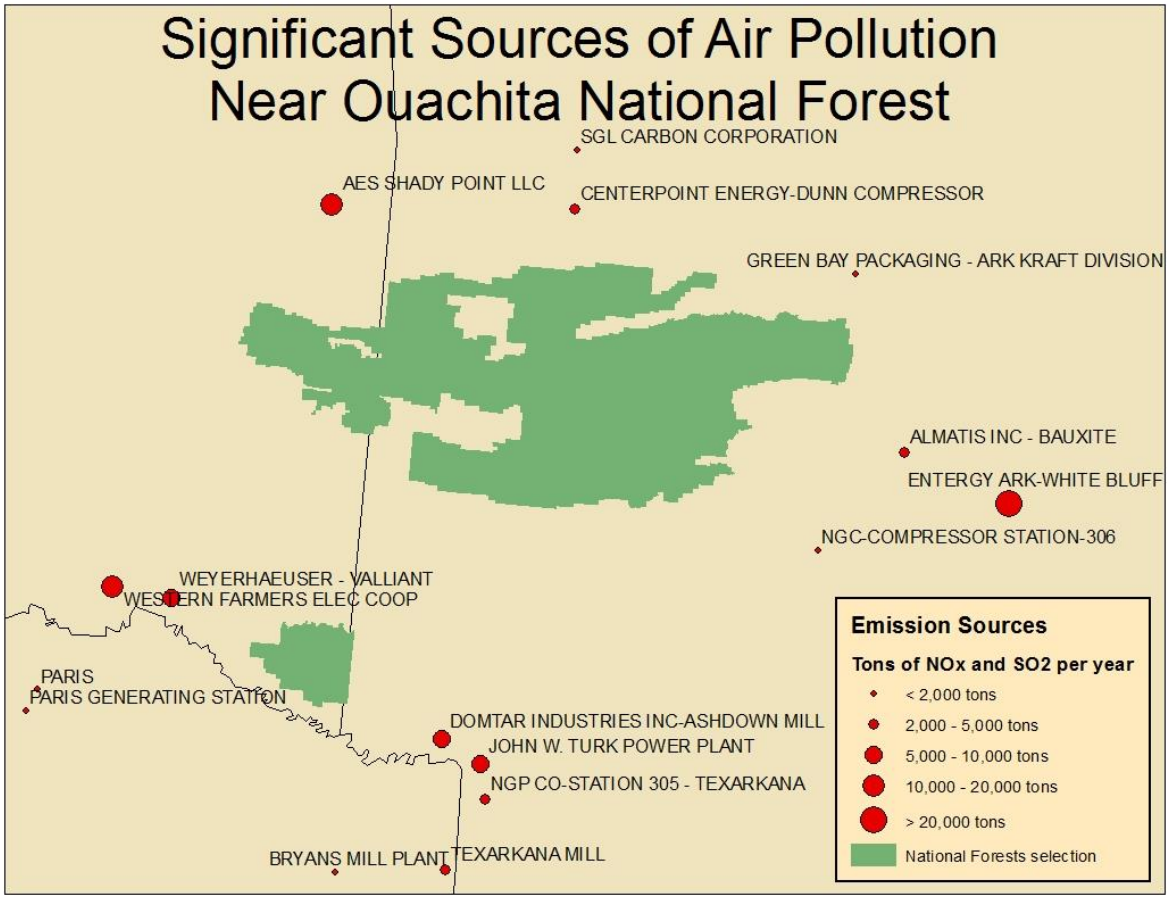
The Forest was required to develop an Air Quality Value Plan that provides a thorough evaluation of currently available air quality monitoring and modeling data for the wilderness areas managed by the Ouachita NF, as well as a characterization of resources that might be affected by air pollution (http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3811710.pdf). This evaluation was used to select AQV's 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 the AQV, and describes how inventory and monitoring will be conducted.

In summary, this report focuses on the air quality issues monitored in the Poteau Mountain, Blackfork Mountain, Dry Creek, Flatside, Upper Kiamichi River Wilderness Areas (WA's), and the Caney Creek Wilderness as the only Class I Wilderness on the Forest. The wildernesses on the Ouachita NF are in an area of relatively low emissions compared to other wildernesses 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.

The initial 2010 risk assessment for acidification points to Caney Creek and Flatside Wildernesses as the areas most at risk 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 is no 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.



Point sources of sulfur dioxide and nitrogen oxide emissions

It was 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 WA's 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 four 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 (WA's) 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 results are reported herein (Appendix A). The need for long-term monitoring was based on the results of the initial inventory and baseline conditions.

As funding allows, Caney Creek WA, the only Class I Wilderness Area on the Forest, will be monitored annually for air quality values. Caney Creek WA also 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 WA's have been established, and again, as funding allows, these WA's 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 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 two 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 two 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 FY 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 FY 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 FY 2013, only the four 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.

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

MA 20 - Wild and Scenic Rivers

For additional information, contact Chris Ham at (501) 321-5202

The National Wild and Scenic Rivers System 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 National System of Wild and Scenic Rivers.

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 southeastern Oklahoma was studied as part of a significant amendment to the 1990 Forest Plan, completed in 2002. The Glover River's "outstandingly remarkable" values are described in Appendix B of the Environmental Impact Statement for that amendment, and a recommendation that 16.5 miles of the Glover River in McCurtain County, Oklahoma, be added to the National Wild and Scenic Rivers System with a designation of "scenic" was part of the Record of Decision. A review of other eligible rivers during the 2005 Forest Plan revision studies revealed none suited for recommendation by the Forest Service as a National Wild and Scenic River, because these rivers are bordered by too little National Forest System land. No action was taken during FY 2012 and FY 2013 to have the Glover River formally designated as a part of the Wild and Scenic River system.

MA 17 - Semi-Primitive Areas

For additional information, contact Chris Ham at (501) 321-5202

Management Area 17, Semi-Primitive Areas, consisting of approximately 136,091 acres, are areas that (a) meet the Recreation Opportunity Spectrum (ROS) 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. No management changes are recommended for Management Area 17.

Scenery Management

For additional information, contact Chris Ham at (501) 321-5202

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 focus areas for Forest management to consider Scenery Integrity Objectives.

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 27,313 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, two Botanical Areas, and one large, undeveloped recreation area (Rich Mountain). There are areas specifically designated as scenic areas (shown in the following tabulation), and three 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 Forest within other Management Areas. Rich Mountain Botanical Area and Rich Mountain Recreation Area are on the Mena Ranger District.

There are two congressionally designated botanical areas in Oklahoma—Beech 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 National Forest System lands surrounding Lake Ouachita in Arkansas and Broken Bow Lake in Oklahoma. All management activities within this area are designed to address wildlife and recreation objectives and the 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 predominantly naturally-appearing with little or no addition of road miles to the transportations system. Portions of this MA are suitable for some timber management activities; others 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. During FY 2012 and FY 2013 the Hickory Nut Vista that provides views over Lake Ouachita was reworked, removing safety hazards and reconstructing the viewing platform. Also stabilization work was accomplished at the Jack Creek Overlook. Although growing vegetation that interferes with viewing continues to pose challenges at some vistas, no management changes related to scenery management are recommended.

MA 19 – Winding Stair Mountain Recreation National Area

Management Area 19, Winding Stair Mountain Recreation National Area and Associated Non-Wilderness Designations, consisting of approximately 79,897 acres, contains lands designated by the Winding Stair Mountain National Recreation and Wilderness Area Act of 1988, Public Law 100–499, except for the two 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 Management Area.

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.

MA 3 – Developed Recreation Areas

For additional information, contact Chris Ham at (501) 321-5202

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 boat-launching ramps. Included within this management unit are campgrounds, picnic areas, horse camps, interpretive and observation sites, information sites, float camps, shooting ranges, and swimming areas.
There are two Forest Plan Objectives that govern developed recreation:

OBJECTIVE 24: "Maintain all recreation facilities to standard."

In FY 2013, 117 recreation facilities were maintained to standard which was 146% above the regional target of 80 sites while in FY14 118 sites were maintained to standard exceeding the target once again by 129%. "To standard" is calculated by the amount of deferred maintenance as a percentage of current replacement value. Using the Forest Service definition, the Ouachita NF is accomplishing 1 percent of the target of the maintained to standard measurement.

OBJECTIVE 25: "Improve accessibility within at least one recreation site per year."

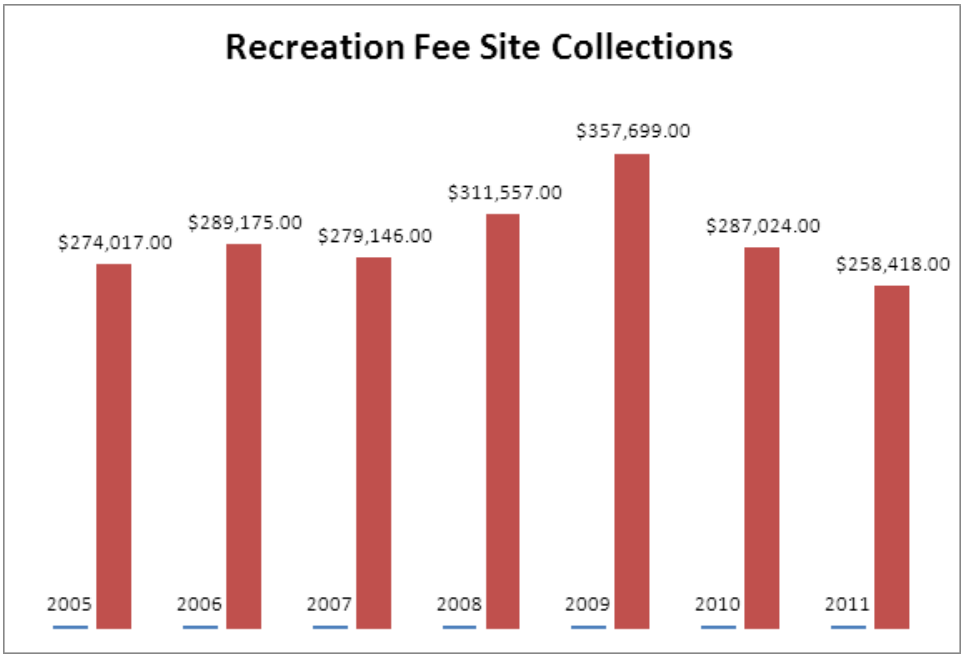
This objective was met with improvements to the Camp Clearfork organizational site with the installation of new hardened trail surfaces throughout the recreation area to improve accessibility from overnight facilities to other recreation facilities at the site.

Fee Sites

For additional information, contact Chris Ham at (501) 321-5202

Occupancy rates are not tracked at non-fee sites. Of the recreation sites that are operated as fee sites, occupancy rates are not relevant for the five day use areas (at Cedar Lake, Lake Sylvia, Shady Lake, Little Pines, and Charlton Recreation Areas). The following tabulation shows data through FY 2011 for the other 14 recreation sites where fees are collected. Fee collections information was not furnished for this FY 2012 – FY 2013 Monitoring and Evaluation Report.

Total Recreation Area/Campground Fee Collections 2005-2011, ONF



The decrease in fee collections for FY 2011 is due to flooding that closed Albert Pike Camping Area and Charlton Recreation Area.

Trails

For additional information, contact Tom Ledbetter at (501) 321-5202

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 trails system in Oklahoma, the International Mountain Bicycling Association "epic" Womble mountain biking trail, and the Lake Ouachita Vista Trail. Key to the development and maintenance of these trail systems is the involvement of dedicated, well trained trail enthusiasts such as the Friends of the Ouachita Trail, the Arkansas ATV Club and the Trail Dogs.

Objective 23 of the Forest Plan is specific to trails: *"Conduct maintenance on at least 300 miles of trails (non-motorized use) per year."*

In FY 2012, 281 miles of trail were maintained; in FY 2013, nearly 211 miles of trail were maintained. 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 past years, the Ouachita NF has reported non-motorized trail maintenance and motorized trail maintenance separately, but due to database structures, it was not possible to separate the two types of maintenance for FY 2012 and FY 2013.

Demand for OHV riding opportunities is very 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 Chris Ham at (501) 321-5202

Based on the 2010 National Visitors Use Monitoring program, overall satisfaction ratings were very high – over 80 percent of visitors to the Ouachita NF were very satisfied with their overall experience. The composite index results were also quite high. Across all types of sites, and all composite measures, satisfaction ratings were above the national target of 85 percent satisfied. The next National Visitors Use Monitoring will take place during FY 2015.

Public and Agency Safety

For additional information, contact Alissa Land at (501) 321-5202 or Tim Fincham at (501) 321-5202

The 2005 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."*

Law Enforcement and Investigation (LE&I) continues to collaborate with local county law enforcement officers in Arkansas and Oklahoma under seven Cooperative Law Enforcement Agreements. The number of Forest Law Enforcement Officers (LEO's) in FY 2011 was seven full time officers, five full time officers in FY 2012, and back to seven officers in FY 2013. The historical high of LEO's forest-wide was twelve. The LEO's often work 120-150 hours in a normal 80-hour, two-week pay period, resulting in Administratively Uncontrollable Overtime (4,368 hours in FY 2012 and 4,501 hours in FY 2013) .

The Forest LEO's responded to or assisted with 42, 51 and 20 accidents during FY 2011, 2012 and 2013, respectively, within or adjacent to the Ouachita NF. These numbers include minor injuries (sprains, dog bites, etc.), All-Terrain Vehicles (ATV), and motorcycle and motor vehicle accidents. Search and rescue operations include searches for persons such as lost hikers, hunters, and prison escapees.

	Motor Vehicle Accidents	ATV Accidents	Motorcycle Accidents	Personal Injury/Other Accidents	Search and Rescue
FY 2011	19	7	4	12	20
FY 2012	12	9	12	18	10
FY 2013	14	3	2	1	9

Three fatalities were reported in FY 2011 as a result of homicide, suicide, and ATV accidents. This number increased to 11 in FY 2012 and included four deaths attributable to a plane crash on the Winona Ranger District that garnered national attention because it claimed the lives of two Oklahoma State University coaches. During FY 2012, an ATV Razor was acquired to address violations on ATV trails, and whether related, or not, there were zero ATV fatalities during 2013. FY 2013 was the first year that the Ouachita NF did not have to report an ATV fatality. LE&I investigated 6 assault cases in FY 2011, 11 in FY 2012 and 22 in FY 2013.

In 2013, LE&I purchased a marine patrol boat to be used to address alcohol and fishing violations on Forest Service lakes and assist in night hunting violations.

During FY 2010, 18 compliance checkpoints were conducted, but during FY 2011, officers conducted 19 compliance checkpoints to address the growing traffic, ATV and alcohol violations occurring as a result of increased public visitation on the Ouachita. Compliance check points increased to 25 in FY 2012 and 21 in FY 2013.

Ninety seven timber spot inspections were completed during FY 2011, as compared to 89 timber spot checks during FY 2010. During FY 2012, 63 timber spot checks were completed and 58 were completed for FY 2013.

A comparison of violation notices and incident reports by FY is provided in the tabulation below.

Violation Notices and Incident Reports by FY, ONF

Fiscal Year	Federal Violation Notices	State Violations	Warning Notices	Incident Reports
2006	256	230	331	444
2007	285	436	370	610
2008	246	513	463	444
2009	305	497	531	596
From 2010 forward Federal and State Violation Notices are reported as a single number				
2010	581		394	628
2011	487			476
2012	354		262	364
2013	542		344	339

In FY 2011, 18 separate DUI and public intoxication incidents were documented; while in FY 2012, 130 separate DUI and public intoxication incidents were documented. For FY 2013, 309 separate DUI and public intoxication incidents were documented, a 237% increase from FY 2012. For FY 2012, 91 separate ATV violations were recorded with 99 recorded for FY 2013.

A total of 207 arrests were reported (88 in FY 2012 and 119 in FY 2013) compared to 123 arrests in FY 2011 and 162 arrests during FY 2010. During FY 2012 4,200 marijuana plants were eradicated from the Forest and approximately 102 pounds of processed marijuana was seized. One drug trafficking organization marijuana grow was discovered with 4,000 plants seized with a street value of over $12,000,000 and a marijuana production/distribution case resulted in the seizure of over $650,000 in drugs and $800,000 in cash and property forfeiture. FY 2013 also resulted in 8 plants being eradicated and seizure of approximately 1 pound of processed marijuana and 39.5 Grams of Methamphetamine. This compares to much smaller numbers for FY 2011 and FY 2010.

Officers, in FY 2011, investigated and assisted in 17 felony drug cases and 44 simple possession drug cases, down from 27 felony drug cases and 68 misdemeanor drug cases in FY 2010. During FY 2012, officers investigated and assisted in 35 felony drug cases and 42 simple possession drug cases; and during FY 2013, officers investigated and assisted in 15 felony drug cases and 66 simple possession drug cases.

For FY 2012, 46 fires were investigated of which thirty one were determined to be arson or human caused fires while for FY 2011, 80 fires were investigated of which 50 were determined to be arson or human caused fires. During FY 2013, 24 fires were investigated of which 16 were determined to be arson or human caused fires.

The tabulation below shows these data since FY 2006, the first full year of monitoring for the 2005 Forest Plan.

Eradications, Arrests, and Investigations by FY, ONF

Fiscal Year	Marijuana Plants	Investigations	Felony Drug Cases	Misdemeanor Drug Cases	Arson cases
2006	6,300	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

*Arson cases occurred and were investigated during 2006 and 2007; however the data were not collected within the Monitoring and Evaluation Reports.

During FY 2011, Ouachita NF Law Enforcement personnel spent approximately 3,307 hours in support of various details on and off their home units. For FY 2011, Ouachita NF Law Enforcement personnel spent 123 hours in public relations programs. Ouachita NF LEO's traveled nearly 260,000 miles in FY 2011, in support of public and agency safety, as well as protection of natural resources and property. Law Enforcement reports show a total of 22,315 public contacts during FY 2011. During FY 2012, Ouachita NF Law Enforcement personnel spent 166 hours in public relations and training programs and traveled over 208,000 miles in support of public and agency safety, as well as protection of natural resources and property. Law Enforcement reports show a total of 22,271 public contacts during FY 2012. Ouachita NF Law Enforcement personnel spent 228 hours in public relations and training programs during FY 2013 and traveled over 212,000 miles in support of public and agency safety, as well as protection of natural resources and property. Law Enforcement reports show a total of 18,436 public contacts during FY 2013. A comparison of public Relations Program Hours, Miles Traveled and Public Contacts made by FY is provided in the tabulation below.

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**

*Data reported are programs, not hours, as reported in subsequent years.

Heritage Resources

For additional information, contact Meeks Etchieson at (501) 321-5202

Heritage Resources are addressed by reporting Heritage Stewardship and Tribal and Native American Interests.

Heritage Stewardship

There are two objectives for the Heritage Stewardship Program:

> *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.*

Review of Progress toward Desired Condition, Priorities, and Objectives

The Heritage Overview, originally due in 2007, has been completed in draft form and has been submitted for review. The process of drafting the Heritage Overview was prolonged due to other priority projects, causing the GIS data originally analyzed for the Heritage Overview to be somewhat dated. The final edits are being made and the Overview is expected to be available by early calendar year 2015.

Review of Trends Revealed Through Monitoring

The Heritage Management Plan (now Heritage Program Plan) was scheduled to be completed by FY 2010. Components of the Heritage Program Plan have been drafted for the Caddo/Womble and Mena/Oden Districts and will be completed for the Forest as a whole once the Heritage Overview is complete, reviewed by the State Historic Preservation Officers and Tribal Historic Preservation Officers, the Heritage Program Plan will proceed to completion.

Priority Heritage Assets (PHAs) are monitored on a Five-year rotation where 20 percent of PHAs are monitored each year; for the current year, the Ouachita has 198 archeological and historic sites on the PHA list. This schedule permits all sites that the Forest Service has invested in to be reviewed every 5 years. The reviews address interpreted sites, sites with management plans, any site that is registered in the National Register of Historic Places, cemeteries, and sites with hazards or severe maintenance needs. Although this schedule is highly effective for the types of sites listed above, there are other important sites that are rarely being monitored. Other important eligible or unevaluated sites are monitored as time permits.

Archeological collections are Priority Heritage Assets. Additional effort will be required to curate archeological collections. Native American Graves Protection and Repatriation Act (NAGPRA) inventory is a high priority and additional emphasis by all districts is needed to assure compliance. All archeological collections curated by the Ouachita NF in the Supervisor's Office

have been examined for faunal materials, the faunal materials pulled and submitted to an analyst for identification of possible human remains. This analysis revealed that the Ouachita collections contained several small human bone fragments from six archeological sites in McCurtain County, Oklahoma. At the same time, complete faunal identification will be completed for eleven archeological sites tested on the Oklahoma District, Tiak, and Kiamichi Units. The Archaeological Resources Protection Act (ARPA) of 1979 required more consistent monitoring, particularly in instances when damaged sites are found. It is required that ARPA documentation be forwarded to Tribes.

Tribal and Native American Interests

For additional information, contact Meeks Etchieson at (501) 321-*5202*

There is only one objective for the Tribal and Native American Interests aspect of the Heritage Program as follows:
OBJ 22. Revise the Programmatic Agreement with SHPOs and THPOs by 2011.

Working together with the Ozark-St. Francis National Forests, a revised Programmatic Agreement to guide the Section 106 (National Historic Preservation Act) work has been prepared. The existing agreement has been extended through January 2015, at which time it will expire. The newly revised agreement, now in draft form, is the result of consultations, both written and face-to-face, with the Oklahoma SHPO and State Archeologist, the Arkansas SHPO and numerous Tribes, including: The Absentee Shawnee Tribe, Alabama-Quassarte Tribal Town of Oklahoma, Caddo Nation, Cherokee Nation of Oklahoma, Chickasaw Nation, Choctaw Nation of Oklahoma, Delaware Nation, Delaware Tribe of Indians, Eastern Shawnee Tribe, Jena Band of Choctaw Indians, Kialegee Tribal Town, Miami Tribe of Oklahoma, Mississippi Band of Choctaw Indians, Muscogee (Creek) Nation, Osage Nation, Peoria Tribe of Indians of Oklahoma, Quapaw Tribe of Oklahoma, Seminole Nation of Oklahoma, Shawnee Tribe, Thlopthlocco Tribal Town, Tunica-Biloxi Tribe of Louisiana, Inc., United Keetoowah Band of Cherokee Indians, and Wichita and Affiliated Tribes.

The new agreement will streamline the Section 106 processes, clarify specific processes, and strengthen our commitment to working with the State Historic Preservation Officers and Tribes. It will be tiered to the Forest Service Heritage Handbook. The goal is to have this revised agreement signed by the time the existing agreement expires in January 2015.

Performance History

Contribution to Social & Economic Sustainability

For additional information, contact Alett Little at (501) 321-5202

The Ouachita NF comprises approximately 4.2 percent of the land base of the state of Arkansas and less than 1 percent of the total land area in Oklahoma. In Arkansas, Ouachita NF System lands occupy a high of 67 percent to a low of 0.08 percent of total lands by county, while within the two Oklahoma counties, National Forest System lands occupy 22 percent of LeFlore County and 11 percent of McCurtain County. The following tabulation displays the amount and percentage of Ouachita NF lands in each county and within each state as a whole:

Lands by State and County, September 2010 - 2013, ONF

State/County	Acres	Ouachita NF Acres 2010	Ouachita NF Acres 2011	Ouachita NF Acres 2013	Ouachita NF Percent of State or County 2013
Arkansas	34,034,560	1,434,899	1,434,718	1,434,718	4.22
Ashley	589,440	1,675	1,675	1,675	0.28
Garland	433,280	120,573	120,573	120,573	27.83
Hot Spring	393,600	320	320	320	0.08
Howard	375,680	1,531	1,531	1,531	0.41
Logan	454,400	18,586	18,586	18,586	4.09
Montgomery	499,840	336,840	336,839	336,839	67.39
Perry	352,640	99,170	99,170	99,170	28.12
Pike	385,920	13,427	13,427	13,427	3.48
Polk	549,760	206,441	206,261	206,261	37.50
Saline	462,720	58,959	58,959	58,959	12.74
Scott	572,160	369,587	369,587	369,587	64.59
Sebastian	343,040	18,956	18,956	18,956	5.53
Yell	593,920	188,834	188,834	188,834	31.79
Oklahoma	43,946,880	354,954	354,954	354,953	0.81
LeFlore	1,015,040	221,949	221,949	221,948	21.87
McCurtain	1,185,280	133,005	133,005	133,005	11.22

Source: Ouachita NF – FY 2012 acres not reported.

There were no substantive changes in the total acres managed under the National Forest System over the past several years. The Ouachita NF is important to many local economies in terms of providing employment and in providing products, services, recreation visits, contracting, and other sources of revenue that then multiply economically within local communities and this has remained fairly stable. Some of contributions are difficult to quantify. One type of economic contribution to counties, however, is clear, as described in the following section on payments in lieu of taxes described below.

Payments to Counties

For additional information, contact Bill Pell at (501) 321-5202

An important source of revenue for many counties that have National Forest System lands is payments received from the US Forest Service. Because no real estate tax payments are made to counties for land that is federally owned, the Secure Rural Schools and Community Self-Determination Act (or, if a county chooses, the older 25 percent Payment Act) provides rural communities with annual funding for: (1) county roads in or near national forests; (2) local school districts that include National Forest System lands; and (3) local conservation projects on or benefitting National Forest System lands. The tabulation on this page shows payments to counties under the Secure Rural Schools and Community Self-Determination Act. Hot Spring County, with only 320 acres of National Forest System land, is the only county with acreage in the Ouachita NF still receiving the 25 percent payments.

Secure Rural Schools and Community Self-Determination Act Payments (Titles I and III) to Counties, FY 2006 - present

AR County	2006	2007	2008	2009	2010	2011	2012	2013
Ashley (003)	3,539	2,869	6,633	6,235	4,970	4,233	$3,412	$2,573
Garland (051)	454,370	453,437	321,2963	291,494	276,302	211,103	$229,758	$185,034
Hot Spring (059)	676	548	5713	568	549	561	$530	$492
Howard (061)	3,235	2,622	5,8201	5,200	5,085	4,956	$4,495	$4,827
Logan (083)	42,505	42,418	70,754	50,287	45,922	43,652	$38,414	$35,367
Montgomery (097)	1,243,580	1,241,027	1,467,711	1,325,823	1,290,494	1,158,828	$1,111,849	$1,107,819
Perry (105)	387,420	328,632	324,278	260,347	237,031	219,113	$187,900	$187,993
Pike (109)	21,847	22,957	31,344	29,111	25,179	23,132	$24,170	$25,732
Polk (113)	648,426	687,539	876,424	832,968	890,615	759,411	$683,118	$632,456
Saline (125)	184,787	216,951	146,405	124,858	112,788	95,534	$91,072	$87,389
Scott (127)	1,456,962	1,165,618	1,614,725	1,456,841	1,577,973	1,500,621	$1,386,118	$1,340,211
Sebastian (131)	64,570	64,438	38,467	35,477	34,226	31,424	$31,118	$28,399
Yell (149)	695,433	694,006	801,940	733,059	666,927	614,500	$569,457	$576,372
OK County	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
LeFlore (079)	974,175	972,176	956,344	842,016	773,112	674,238	$651,328.	$645,564
McCurtain (089)	264,770	264,226	383,889	350,417	347,835	309,374	$265,335	$269,341

Source: http://www.fs.fed.us/projects/ under Secure Rural Schools and Community Self-Determination Act: Proclaimed National Forest All Service Recipients-10-2: Payment Detail

These annual payments (plus additional payments processed through the Department of the Interior) have provided some stability and predictability for funding to the counties. The Secure Rural Schools and Community Self-Determination Act was set to expire September 30, 2011. [On July 6, 2012, the Secure Rural Schools and Community Self-Determination Act of 2000 was

reauthorized for federal fiscal year (FY) 2012 as part of Public Law 112-141and was extended again in 2013. See http://www.fs.usda.gov/pts/

In addition to these payments, the Forest Service worked with many counties to implement millions of dollars' worth of Title II projects under the Secure Rural Schools and Community Self-Determination Act on or near the Ouachita NF. Among other mutually beneficial purposes, these projects helped local communities and the Forest Service improve the maintenance of many existing roads, trails, and recreation areas. For a listing of Title II projects on the Ouachita NF and the Title II funding associated with each, navigate to: http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPwhQoY6BdkOyoCAPkATlA!/?ss=119985&navtype=BROWSEBYSUBJECT&cid=null&navid=111130000000000&pnavid=111000000000000&position=BROWSEBYSUBJECT&ttype=main&pname=Secure Rural Schools-RAC Website, and then click on RAC Website, "RAC," "Ozark-Ouachita," and "Projects." Except for a few projects in Logan and Yell Counties, all Title II projects listed for the counties in the table above occurred on or near the Ouachita NF (other counties listed under the Ozark-Ouachita RAC had Title II projects on or near the Ozark-St. Francis National Forests.)

Budget

For additional information, contact Diane Lowder at (501) 321-5202

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 FY 2006 through FY 2013are shown in the following tabulation.

Allocated Funding 2006-2010, ONF

Year	2006	2007	2008	2009	2010	2011	2012	2013
Dollars (in Millions)	8.5	6.8	8.8	11.7	10.5	9.8	11.8	8.7

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.

Resource Management Accomplishments

The following table summarizes resource management accomplishments for the Ouachita NF from 2003 to present.

Objective or Activity	Unit of Measure	FISCAL YEAR										
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Trail Construction	Miles	6	6	0	5	5	4	5	24	24	3	5
Trail Maintenance	Miles	293	288	293	299.8	300	245	244	150	150	281	211
Heritage Resource Survey	Acres	6,490	22,930	20,046	16,176	22,460	10,444	21,965	6,597	6,211		
Waterhole Development	Structures	107	142	220	57	212	99	85	51	101	44	31
Midstory Reduction	Acres	3,014	353	1,350	7,715	4,935	2,410	5,965	5,159	5,362	5035	6408
Prescribed Fire	Acres	128,319	134,386	96,376	43,093	145,354	120,748	120,125	142,817	96,720	101,529	95,165
Lime, Fertilize and/or Stock Lakes/Ponds	Acres	647	670	828.5	970	1,281	558	474	548.5	696	702	593
Livestock	Number	1,179	903	715	530	300	154	142	133	116	116	116
Active Range Allotments	Number	20	17	16	16	16	6	4	3	3	3	3
Watershed Improvement & Maintenance	Acres	35	56	73	87	45	41	75	64	118	1,500	
Minerals Administration	Cases	191	577	860	403	640	894	894	839	N/A	232	235
Timber Offered	Million cubic feet	13.11	17.77	20.02	7.57	19.86	21.52	16.17	20.47	19.88	16.13	18.19
Timber Sold	Million cubic feet	11.16	14.24	16.68	19.93	20.64	20.18	17.54	18.93	20.05	17.84	15.37
Land Line Location Or Maintenance	Miles	39.5	77.0	80.0	52.6	65.0	135.4	136.5	114.02	105	99.75	40.00
Rights-of-way	Cases	2	1	1	0	1	0	2	3	0	6	1
Arterial/Collector Roads Reconstructed	Miles	33	4	14	15.56	6.44	10.54	1.94	7.96	112.35	37.6	0.99
Local Roads Constructed	Miles	5	5	5	15.99	4.28	8.54	21.00	3.29	11.13	5.1	2.21
Soil Inventory	Acres	50,000	0	9,090	3,240	0	0	26,165	0	24,800	0	0
Stream Inventory	Miles	N/A	N/A	N/A	46	10	10	10	10	46	24	27
Stream Inventory For Leopard Darter	Miles	N/A	N/A	N/A	8	8	8	8	7	7	8	8
Stream Inventory For Ouachita Darter	Miles	N/A	N/A	N/A	6	6	0	6	10	10	0	0
Total Stream Inventory	Miles	N/A	N/A	N/A	60	26	18	24	27	63	32	35
Fish Attractors	Sites	45	26	6	16	65	48	73	40	44	16	0
Streams Monitored for Offsite Herbicide Movement	Sites	11	11	11	6	3	4	0	0	4	3	3

* Basin Area Stream Survey occurs approximately one time every five years. Analysis of results is underway, but were unavailable for this report.
N/A – Not Available

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Appendix A – Contributors to the 2012-2013 M&E Report

Mark Adams—GIS Specialist
Robert Bastarache—Biologist
Bubba Brewster—Forest Engineer
Lisa Cline – Forest NEPA Coordinator
Steve Cole—Staff Officer, Integrated Resources
Betty Crump—Stream Ecologist
Andy Dyer—Fire Management Officer
Meeks Etchieson—Forest Archeologist
Tim Fincham—Law Enforcement
Gary Griffin—Facilities Engineer
Chris Ham —Recreation Program Manager
Susan Hooks—Forest Botanist and Range Program Manager
Alissa Land—Law Enforcement
Mary Lane—Forest Wildlife Biologist
Tom Ledbetter—Forest Trails Coordinator
Alett Little—Forest Planner
Judith Logan—Forest Air Specialist
Caroline Mitchell—Writer Editor
Diane Lowder—Budget Officer
Warren Montague—District Wildlife Biologist
Lea Moore—Civil Engineer
Jeff Olson—Forest Soil Scientist
Bill Pell—Staff Officer
Daniel Stratton—Air Specialist
Elaine Sharp—Forester Lands/Special Uses
Jerry Soard—Assistant Fire Team Leader
Jessica Soroka—Realty Specialist
James D. Smith—Forest Health Protection
JoAnn Smith—Forest Silviculturist
Richard Standage—Forest Fisheries Biologist
Charlie Storey—Forest Land Surveyor
Norman Wagoner—Forest Supervisor
Mike White—Technical Services Team Leader
Ray Yelverton—Sales Forester

Appendix B – Ouachita NF

Project Decisions Signed in FY 2012 and 2013

Management Unit	Project Name	Decision Type	Project Purpose
Caddo-Womble	Efird Road Authorization	DM	Special use management
Caddo-Womble	Entergy High Peak Permit	DM	Special use management
Caddo-Womble	Entergy -Kilgore Right of Way Easement	DM	Special use management
Caddo-Womble	Forest Health Restoration	DN	Forest products Vegetation management
Caddo-Womble	Jewell Patent Access Road	DM	Special use management
Caddo-Womble	LOViT Trail construction Segment 6-7	DM	Recreation management Special use management
Caddo-Womble	Manual Release Treatments of Shortleaf Pine Saplings	DM	Forest products Vegetation management
Caddo-Womble	Montgomery County Clark Lane Easement	DM	Special use management Road management
Caddo-Womble	Montgomery County Regional Public Water Authority Radio Repeater	DM	Special use management
Caddo-Womble	NOAA Generator and Propane Tank at High Peak	DM	Special use management
Caddo-Womble	Seed Orchard EA	DN	Special area management Vegetation management Fuels management Research and Development
Caddo-Womble	Wilson Special Use Road Permit	DM	Special use management
Cold Springs-Poteau	FY 2011 PCT and Release Treatments	DM	Vegetation management
Cold Springs-Poteau	FY11 Prescribed Burn - East Newman Burn Unit	DM	Wildlife, Fish, Rare plants Vegetation management Fuels management
Cold Springs-Poteau	FY11 Prescribed Burn DM	DM	Wildlife, Fish, Rare plants Vegetation management Fuels management
Cold Springs-Poteau	Jones Creek	DN	

Appendix B – Ouachita NF

Project Decisions Signed in FY 2012 and 2013

Management Unit	Project Name	Decision Type	Project Purpose Land Management Planning Recreation management Heritage resource mgt Wildlife, Fish, Rare plants Vegetation management Fuels management Watershed management Road management
Cold Springs-Poteau	Lick Creek	DN	Recreation management Heritage resource mgt Wildlife, Fish, Rare plants Forest products Vegetation management Fuels management Watershed management Road management
Cold Springs-Poteau	Ouachita Trail Relocation	DM	Recreation management
Cold Springs-Poteau	Reforestation and Rx Burning in Compartment 257, Stand 21	DM	Vegetation management
Cold Springs-Poteau	Special Uses Reauthorization - Alltell Communications, LLC and Entergy Services, Inc./Alltell d/b/a/ Verizon Wireless Communication Facilities Poteau Mountain	DM	Special use management
Cold Springs-Poteau	Special Uses Reauthorization - Alltell Communications, LLC and Entergy Services, Inc./Entergy Services, Inc. Communication Facilities White Oak Mountain	DM	Special use management
Cold Springs-Poteau	Special Uses Reauthorization - AR Game & Fish Commission.	DM	Special use management
Jessieville-Winona-Fourche	Commercial Thinning and Stand Improvement, Crossett Experimental Forest (SRS-4159)	DM	Forest products Vegetation management Research & Development
Jessieville-Winona-Fourche	Crossett Experimental Forest (SRS 4159) Prescribed Burning 2011	DM	Vegetation management Fuels management Research & Development
Jessieville-Winona-Fourche	Dutch Creek Mountain Tower - Entergy Special Use Extension	DM	Special use management
Jessieville-Winona-Fourche	First Electric Utility Corridor Perry County Road 14 East - Special Use	DM	Special use management
Jessieville-Winona-Fourche	Perry Co., AR Road 14 Improvement - Special Use	DM	Special use management
Jessieville-Winona-	Special Uses Reauthorization - Ouachita NF	DM	Special use management

Appendix B – Ouachita NF

Project Decisions Signed in FY 2012 and 2013

Management Unit Fourche	Project Name	Decision Type	Project Purpose
Jessieville-Winona-Fourche	TSI Stand 32 C-1410 Lower South Fourche WS	DM	Vegetation management
Jessieville-Winona-Fourche	Wildlife Ponds 2011	DM	Wildlife, Fish, Rare plants
Jessieville-Winona-Fourche	Windstream Fiber Optic Upgrade Highway 9/10 Special Use	DM	Special use management
Jessieville-Winona-Fourche	Windstream Underground Cable - Perry County Road 14	DM	Special use management
Mena-Oden	Lower Irons Fork/Johnson Creek Watersheds	DN	Recreation management Heritage resource mgt Wildlife, Fish, Rare plants Forest products Vegetation management Fuels management Watershed management Road management
Oklahoma	Access Road for The Roy Reed LLC	DM	Special use management Road management
Oklahoma	American Burying Beetle Area Habitat Improvement Project	DM	Land management planning Wildlife, Fish, Rare plants Vegetation management
Oklahoma	Blackjack Site Prep	DM	Vegetation management
Oklahoma	Buck Hunt Access Road	DM	Special use management
Oklahoma	Buffalo Creek Two Project	DN	Forest products Vegetation management Fuels management
Oklahoma	Carter Creek - NWTF Prescribed Burn	DM	Wildlife, Fish, Rare plants Vegetation management Fuels management Watershed management
Oklahoma	Choctaw Nation Trail Relocation	DM	Recreation management
Oklahoma	Cooper Creek Blowdown Salvage Sale	DM	Forest products Fuels management
Oklahoma	FBI Communications Permit Re-issue	DM	Special use management

Appendix B – Ouachita NF

Project Decisions Signed in FY 2012 and 2013

Management Unit	Project Name	Decision Type	Project Purpose
Oklahoma	Long Branch Prescribed Burn	DM	Fuels management
Oklahoma	Lower Cedar Creek Crossing Removals	DM	Road management
Oklahoma	McCurtain RWD #1 Permit Re-issue	DM	Special use management
Oklahoma	McCurtain RWD #6 Permit Amendment	DM	Special use management
Oklahoma	Morrison Road Permit	DM	Special use management Road management
Oklahoma	Oklahoma Regents Communications Tower	DM	Special use management
Oklahoma	Panther Creek 2 - Prescribed Burn	DM	Wildlife, Fish, Rare plants Vegetation management Fuels management Watershed management
Oklahoma	Rock Shop Fire Salvage Sale	DM	Forest products Vegetation management
Oklahoma	Walker and Harvey Mountain West Prescribed Burn	DM	Fuels management

Appendix C – FY 2012 – FY 2013 Implementation Monitoring Reviews

Mena-Oden Implementation Monitoring Review
Rocky Branch Watershed Project, Ouachita NF
September 12, 2012

The Mena/Oden District personnel are appreciated and commended for their outstanding and enthusiastic participation in preparing and implementing this review. District Ranger Tim Oosterhous, Forester Jennifer Benefield, Forestry Technician Johnny Smith, and District Wildlife Biologist Rhonda Huston assisted with the route designation and were instrumental in providing documents for review. Archeologist Maria Schleidt provided an amazing presentation that was informative as well as interesting on the history of Old Forester during the lunch break. Most of the district personnel accompanied the review team, answering questions and presenting work as accomplished, as well as explaining work to be implemented at a later date, particularly Assistant Fire Management Officer Adam Strothers and District Silviculturist Chris Morgan.

Comments and Recommendations

The following comments were offered particular to an area or activity. More comprehensive review comments follow within the specialists' reports which are attached as appendices.

- In the dry oak woodland restoration project area, congratulations were offered for implementing and working towards a forest plan objective. The dry oak woodland prescription was thinned too low at 45 BA, with a mosaic thinning (variable across the landscapes, but average of 45). The district said these were the instructions given to the markers. For the most part the pine component has been removed from the system, at times leaving some openings if the pines were clumped. However, to "increase" or maintain diversity, it was suggested that we should retain "relict" trees (pine and hardwood) instead of cutting all pine as prescribed in this case.

- The NEPA documents stated that the pine woodland would be thinned to 50 BA pine and 5-10 BA hardwood. In the pine woodland restoration project area, the dbh was not reduced to the prescribed level; however the midstory removal had not been accomplished. With three cursory BA plots, coming up with 90, 80, and 100 BA, and all plots with at least 10 BA hardwood, this seemed to be a pretty high BA for a mature woodland stand. At this stage the commercial thinning and prescribed

burning have been accomplished. The midstory removal still needs to be accomplished. If the objective of the MSR as stated was to cut everything below the 7-10" dbh range, then some of this could have been removed in the commercial sale. Recommend that future woodland commercial cuts be thinned a little lower, because the objective here is to get the mature stand to a more open canopy stage, with abundant herbaceous groundcover.

- Commercial thinned loblolly stands in MA 14 to a target average basal area (BA) of 65, does not match the marking guidelines. However, marking guidelines will have 85 BA by including 15 BA of hardwood. The loblolly stand was thinned to 60-80 BA pine and 15 BA hardwood. There was also some discussion on the fact that the responsible official could reduce the BA if site-specific conditions warrant.

- Within the modified seed tree harvest and regeneration, the seed tree was cut in June 2011, leaving 5-15 pine and 5 hardwood BA, and then was burned in 2012. District stated that hand planting would occur, if needed, after 3-4 years. This is a discrepancy with the EA which states that after 2 years, planting will occur if not adequately stocked. District also stated that it was easier and more convenient to have a seed tree than Shelterwood, due to only 1 entry with seed tree.

- The Mena/Oden RD is carrying the majority of the Forest's regional non-native invasive species (NNIS) control program by addressing NNIS control through spraying roadsides for *Sericea lespedeza* as well as other NNIS within every watershed entered for analysis. It was pointed out that the SMA areas along the roads were heavily infested with *Sericea*. It was suggested that until herbicide treatment is approved by the FS within SMAs, the district could mechanically treat NNIS within the SMAs by bushhogging prior to *Sericea* seed heads maturing to reduce spread as long as NEPA is approved.

- Road construction was discussed at length, with the need to have such a large ROW for administrative use questioned. Not only is constructing this road or any other road using timber sales dollars reducing the KV funding, but with reduced timber prices, KV funds are getting a double hit for road construction costs. After more information was provided by Engineering, it was defended that the road in question was well-budgeted, appropriately placed and well-implemented for long-term access to several stands of potential timber production in accordance with current direction.

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- The EA specified that a fish passage barrier at a vented low-water ford would be corrected in 2009 (and there was no caveat found in the EA that it could take place within the usual 10-year period the EA/project would be active). This work was not done and while it still could be done utilizing KV funds, would this be the best use of the limited KV funds that are or might become available.

- The EA calls for allowing the issuance of public rock collecting within the clearing limits of road construction, reconstruction and temporary road construction (ditch bank to ditch bank) (see page 28 of the EA). Clearing limits and ditch bank to ditch bank are not the same, particularly when the slope above the ditch is reshaped. Concern was for salamander habitat degradation.

- Burning plans should define objectives in relation to acceptable mortality. Prescribed burning plans contained updated and current Job Hazard Analyses. The daily briefing was conducted and documented. Potential hazards were included in the burning plans and discussed during the safety briefings. Burn implementation was stated to have been routine.

- The air analysis shown is the absolute bare minimum that could be done. They did a VSmoke run. The dispersion index was rather low and I wouldn't recommend they do such a large burn with such a low DI. VSmoke is the perfect tool to determine what parameters they would need to raise the DI to eliminate any smoke problems. They neglected to do this. They didn't even decide which wind direction would be the most favorable. We are long since passed doing one run and calling it good. We should use it as the tool it was intended for. They did identify a few smoke sensitive targets but didn't say how far away or which direction they were from the burn. There was no identification of smoke sensitive individuals or what mitigation measures they would use if there were smoke sensitive individuals close to the burn. Will they be notified prior to the burn so they can leave the area if necessary? There were only two mitigation measures listed for burning and they were for traffic control.

- The unit has a moderate compaction hazard and a slight erosion hazard, and it would pass Regional soil quality standards. At each of the stops during the IMR, the Forest's Soil Specialist reviewed the project area for evidence of soil erosion, compaction, topsoil displacement or loss of soil organic matter. There were a very few ruts, rills, and no significant soil erosion or soil compaction observed at any of

the IMR stops. Within the pine woodland restoration area, a fireline had been waterbarred and vegetated, but a few of the waterbars were too perpendicular to the

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- natural slope and not functioning as well as necessary. Waterbars need to angle to the downslope side so that water will drain.

- Streamside management areas (SMAs) within the project area and outside of the reviewed areas were inspected by the soil scientist the following day to review SMAs within the watershed for compliance with plan direction including BMPs. It was apparent that for the most part, the SMAs were appropriately implemented and functioning properly.

- NEPA documentation of 'Need for the Action' is supported by contrasts between existing conditions and cited desired conditions and/or objectives of the Revised Forest Plan. Relevant planning documents are adequately cited and consistent with direction and policy in-place at the time it was written. NEPA documents need to be more site specific and improved for clarity.

- Excellent references to Forest Plan in the EA. Due to discussions about Forest Plan Standards during the IMR, it is recommended that each person associated with the project start their work with a review of the EA and if there are questions, a review of relevant Forest Plan Standards.

- The Roads Analysis had good information and confusing information. There is now new direction, but the review was based on the current direction of 2007. Within the Roads Analysis Report, there were minor discrepancies between the miles of system open road, and several recommendations that did not seem to have been carried over into the EA. Implementation or not was also confusing. This is brought out to show how confusing our work can be to the public and the importance of being precise and clear as to what is planned. Overall, the Roads Analysis was very thorough, and almost all of the recommendations were carried forward into the EA.

- There are no MVUM comments related to the Rocky Branch Watershed Assessment, since it was not in effect at the time. A note of caution to include the MVUM in future projects and a reminder to send all road changes in to Lea Moore so that changes can be included in the annual MVUM as they are accomplished.

- Ranger Districts should be encouraged to conduct their own IMR's to monitor whether they are meeting site specific and Forest Plan objectives. The objectives for each IMR need to be clearly defined. For this IMR should we have taken plots to determine if the defined basal area was being left in each stand we reviewed? Were we to look at SMZ's in this IMR? What exactly should we have taken a hard look at? In general, if we are to take a hard look at things and depending on the drive time, two stops are about the maximum number.

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Oklahoma Implementation Monitoring Review
Buffalo Creek 1 & 2 Watershed Projects & Panther Creek CE
Ouachita NF
February 7, 2013

The NEPA documents need to be more site-specific and improved for clarity. Ranger Districts may consider writing a prescription for planned treatments prior to developing alternatives in the NEPA document. It appears that the District Ranger and his staff have been operating under the assumption that Forest-wide travel management planning (often referred to as MVUM, which stands for Motor Vehicle Use Maps) took care of all the transportation planning needed for system roads on the Oklahoma districts. SO staff has assumed right along that all ranger districts were continuing to conduct transportation analyses for each watershed they analyze during project planning. One upshot is that there are no transportation analyses included in the project record for Buffalo Creek I or Buffalo Creek II. All Level 1 roads were not necessarily examined in the initial rounds of travel management planning, because the focus of that process is (and remains) on public access via motorized vehicle.

Many are appreciated and commended for their assistance in preparing and implementing this review: District Silviculturist Mark Davies for assisting with the route designation and was instrumental in providing documents for review; Archeologist Bert Pelletier for his assistance with maps and archeology information during the IMR; and district personnel that accompanied the review team for answering questions and presenting work as accomplished, as well as explaining work to be implemented at a later date.

Comments and Recommendations

The following comments were offered particular to an area or activity. More comprehensive review comments follow within the specialists' reports which are attached as appendices.

- There was no Silvicultural Prescription written for these EAs. The Forest as a whole has become lax on this requirement. But it is still a requirement, and the Forest will start requiring them with each project EA. Also, a written marking prescription should be provided to the TMA by the Silviculturist. Mark and Eric do have seemed to have a good system (without documentation) with the benefit of skilled markers and get answers thru meetings in the field.

- Since the superior growth of this industry loblolly allows the effects of thinning to only last about 5 years, can the EA allow for 2 cuts within a 10-12 year time frame. Can the Buffalo Creek EAs be revisited and allow a 2nd cut with an amendment.

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- Most all of the acquired loblolly plantations are under 35 yrs. of age and the plan directs that the approximate age of loblolly before final harvest should be 35. The plan also sets requirements for meeting regeneration cuts and early seral in project areas. This contradiction should be discussed to determine the best outcome on a Project Level basis. Thinning these sites before 35 yrs. are a great financial asset, but a start to move this area into varied age classes should also be considered.

- Determine what type of timber removal could be done around the archeology site without damaging it. Perhaps a stewardship type project where restrictive and selective cutting is done to allow more area to be dug and look a little bit more like the historic sites. There is a concern to protect the site from vandals also.

- KV plan--Eric and the District should be commended on the use of KV$ to upgrade a road. Eric carefully followed directions that it should not be any responsibility of the purchaser and was above and beyond the need for the timber sale. This is the first time this has been attempted on the Forest. Road maintenance within the sale area boundary was added as an acceptable project about 5 years ago.

- It appeared that the district did implement the NEPA decision to reduce tree density, construct temporary roads, construct ponds, reduce midstory, control burn and maintain existing system road. However, the district did not seem to achieve one of the objectives and desired conditions stated in the DN and FONSI for Buffalo Creek II Project, which stated the objective of "… increasing the amount of early seral vegetation available to wildlife…". There was no discussion in the EA as to why this standard was not met or even why the district didn't work to achieve this standard.

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- Seasonal road closures and road analysis - There appeared to be no documentation as to whether or not this design criterion was looked at or has been met. There was no travel analysis completed for this project. The ranger stated that there was no travel analysis completed needed since there was no change in roads and that he was relying on the forest-wide travel analysis (MVUM) to cover roads. The biologist should have ensured the roads was looked at since it is a wildlife standard. There was no mention of miles of roads per square mile to tell if this standard was achieved.

- Wildlife ponds – Although numerous ponds are proposed in the project area, the district documented that the acres/pond is not being reduced; there is no discussion that the objective is to increase habitat for amphibians and other wildlife. Therefore, it is unknown what the wildlife objective is for constructing ponds.

- The District did not address NNIS (non-native invasive species) impacts in the EA. NNIS were observed in the project area. The District responded and said that they have since added the discussion to their EAs.

- From the standpoint of the soil resources, it appeared that this portion of the project work are meeting the objectives and achieving them within the parameters of the Forest Plan. All indicators point to an overall condition of good soil health.
- Access needs for this project appear to be adequately met. Minor issue of Lead off ditches being connected to drains was brought up. Compliments on the road improvements made. In route to Stop 4, it was noticed that some wing ditches route either too far into the woods and in too close proximity to tributaries, or route directly into the tributaries. Attention should be given to such areas, many of which can be improved either through re-design and/or seeding and mulching. One commendation for the use of KV funds to reconstruct road 53000 to reduce sediment in to the Mountain Fork River. This is the first such project on the Ouachita NF.

- Future documents (EAs, decision documents) discussing prescribe burning need to incorporate language from HFRA and HFI in regard to condition class improvement and work in the WUI as applicable. There is a need to maintain the tie with what we're doing on the ground as it relates to forest health, sustainability and restoration. These connect with HFRA and HFI. Discussions of fire regime(s), comparing current condition class(es) to referenced condition class(es), monitoring for changes in post-burn conditions and whether prescribed burn projects are in the WUI should be included in prescribed burning plans and post burn evaluations.

- Continue the emphasis on safety in future prescribed burning operations. Discussion covering burn implementation revealed no communication issues. An organizational chart was utilized. The number and qualifications of personnel were appropriate for the burn reviewed.

- There were few if any references to fish passage being provided or not being provided, in any of the NEPA documents, the BE provided or the BE sections of the EA's. There should have been a discussion of the considerable coordination with the USFWS, we had over the use of the lowermost crossing of Buffalo Creek and how to minimize impacts to the creek and its leopard Darters with the use of a temporary low-water crossing approach instead of a major construction of a larger/longer structure that would have caused considerable more disturbance/sedimentation. This could have been considered a special mitigation and carried into the project proposal and the decision notice given, the significance of working with a threatened species.

- Also for Buffalo 1 on the north side of road 28000, SW004 should have been noted as mitigation and added to the project proposal and then carried through the BE to the EA to the Decision Notice relating to special soil erosion control measures being put into place 15 days or sooner after closure of a unit for any drainages of any tributaries to Critical Habitat of the Leopard Darter. In actuality, this guidance should be rewritten/revised in the next Forest Plan Amendment or Revision to standardize the number of days that erosion control measures are to be implemented during either closures or during periods of inactivity and it should be applied to all tributaries to Leopard Darter Critical Habitat as well as streams and their tributaries that contain

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leopard Darters such as Buffalo Creek itself that are not within USFWS designated Critical Habitat. As it is, this guidance doesn't apply to Buffalo Creek and its imperiled population of leopard Darters since the creek joins the river below the end of Critical Habitat in the river during dry periods or the reservoir at higher levels. Keeping Buffalo Creek "healthy" is every bit as important as the river further upstream or any of the other stretches of Critical Habitat for leopard Darters.

Appendix D – 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 E – Red Slough Bird Occurrence Records

Red Slough Bird Checklist					
Winter-(Dec-Feb.) **Spring**-(Mar-May) **Summer-**(Jun.-Aug) **Fall**-(Sep-Nov)					
* = confirmed breeder ** = probable breeder					
C = Common, FC = Fairly Common, U = Uncommon, O = Occasional, R = Rare, V = Vagrant, E = Expected					
Ducks, Geese, and Swans	**Occurrence Dates**	**Winter**	**Spring**	**Summer**	**Fall**
Fulvous Whistling Duck			V		
Black-bellied Whistling Duck *	Apr 14-Sep 20		U	U	O
Greater White-fronted Goose	Oct 13-Mar 30	O	FC	R	O
Snow Goose	Oct 10-Mar 30	FC	FC		O
Ross' Goose	Nov 1-Mar 25	O	FC		O
Cackling Goose	Feb 1-Mar 30	O	O		E
Canada Goose *	year round	U	U	U	U
Tundra Swan		V	V		
Trumpeter Swan		R	R		
Wood Duck *	year round	U	C	FC	C
Gadwall	Oct 1-May 14	C	FC	O	C
American Wigeon	Sep 28-April 13	FC	FC	R	FC
Mallard *	year round	C	FC	U	FC
American Black Duck			V		
Mottled Duck**	May 6-Jun 27; Aug 2-Sep 23	R	R	R	R
Blue-winged Teal	year round	O	C	U	C
Cinnamon Teal			R	R	
Northern Shoveler	Sep 2-May 4	C	C	O	FC
Northern Pintail	Sep 5-Mar 28	FC	U	R	FC
Green-winged Teal	Aug 20-Apr 23	C	FC	O	C
Canvasback	Oct 29-Mar 22	U	O		R
Redhead	Oct 28-Mar 22	R	R		R
Ring-necked Duck	Oct 14-Apr 8	FC	FC	R	FC
Greater Scaup			R		
Lesser Scaup	Oct 22-Apr 21	O	O		O
Bufflehead	Nov 14-Mar 30	R	R		R
Common Goldeneye		R			
Hooded Merganser *	Nov 4-May 7	U	O	O	U
Red-breasted Merganser		E	R		
Ruddy Duck *	Nov 2-Apr 24	U	U	R	U
Turkey and Quail					
Wild Turkey *	year round	R	O	R	E
Northern Bobwhite **	year round	O	O	O	O
Loons					
Common Loon					R
Grebes					
Least Grebe					V
Pied-billed Grebe *	year round	U	FC	C	FC
Horned Grebe			R		R
Eared Grebe		R	R		R
Shearwaters and Petrals					
Shearwater sp.	Hurricane Gustav (2008)				V

Pelicans	Occurrence Dates	Winter	Spring	Summer	Fall
American White Pelican	Jan 9-Dec 7	O	FC	U	FC
Cormorants and Anhingas					
Neotropic Cormorant *	Mar 26-Sep 29		U	U	R
Double-crested Cormorant	year round	FC	FC	O	FC
Anhinga *	Mar 28-Oct 25	R	O	FC	U
Frigatebirds					
Magnificent Frigatebird	Hurricane Gustav (2008)				V
Bitterns, Herons, and Egrets					
American Bittern *	Mar 11- Jun 30: Aug 3-Nov 28	R	U	O	O
Least Bittern *	Apr 14-Sep 27		U	U	O
Great Blue Heron	year round	FC	C	C	FC
Great Egret *	Mar 8-Nov 18	R	C	C	FC
Snowy Egret *	Mar 28-Oct 14		FC	C	FC
Little Blue Heron *	Mar 15-Sep 28		FC	C	FC
Tricolored Heron **	Jun 5-Sep 27		R	O	O
Cattle Egret *	Mar 24-Oct 18	R	FC	C	FC
Green Heron *	Apr 12-Oct 22		U	U	U
Black-crowned Night-Heron **	Mar 12-Oct 19	R	O	U	U
Yellow-crowned Night-Heron **	Mar 23-Sep 19		O	FC	U
Ibises and Spoonbills					
White Ibis *	Mar 20-Oct 28	R	C	C	FC
Glossy Ibis *			R	R	
White-faced Ibis *	Mar 3-Jun 18; Jul 6-Oct 31	R	O	O	U
Roseate Spoonbill	Jun 7-Sep 26		R	U	O
Storks and Vultures					
Wood Stork	Jun 7-Sep 27			C	C
Black Vulture	year round	U	U	U	U
Turkey Vulture	year round	C	FC	FC	C
Ospreys, Hawks, and Falcons					
Osprey	Apr 6-May 1; Sep 2-Oct 18		O		O
White-tailed Kite					V
Swallow-tailed Kite				V	
Mississippi Kite *	Apr 18-Sep 4		FC	FC	R
Bald Eagle	Nov 7-Apr 25	O	O	R	O
Northern Harrier	Sep 1-May 10	FC	U		U
Sharp-shinned Hawk	Sep 18-Apr 17	O	O	R	U
Cooper's Hawk	year round	O	O	O	U
Harris' Hawk		V			
Red-shouldered Hawk *	year round	U	U	U	U
Broad-winged Hawk	Apr 1-May 14; Sep 12-Oct 24		O		O
Swainson's Hawk	Apr 4-May 30; Sep 3-22		O	R	O
Red-tailed Hawk**	year round	FC	FC	O	U
Golden Eagle	Dec 16-Mar 6	O	R		R
Crested Caracara		V			V
American Kestrel	Aug 19-Apr 24	U	U	R	U
Merlin	Sep 29-May 2	O	O	R	O
Peregrine Falcon	Mar 14-May 14; Sep 4-Oct 13		O	R	O
Prairie Falcon		R			R
Rails, Gallinules, and Cranes	**Occurrence Dates**	**Winter**	**Spring**	**Summer**	**Fall**

Yellow Rail	Oct 3-Dec 28	O	E		U
Black Rail			E	R	E
King Rail *	year round	O	U	O	O
Virginia Rail	Sep 2-May 4	O	O		O
Sora	Mar 12-May 14; Aug 20-Nov 16	R	U	R	U
Purple Gallinule *	Apr 23-Aug 20		R	R	
Common Moorhen *	Apr 4-Nov 1	R	U	U	O
American Coot **	year round	C	C	U	FC
Sandhill Crane	Nov 2-Mar 9	O	R		R
Plovers					
Black-bellied Plover	Apr 30-Jun 5; Aug 7-Sep 28		O	O	O
American Golden Plover	Mar 8-Apr 24	R	U	R	R
Semipalmated Plover	Apr 13-May 26; Jul 12-Sep 11		O	O	O
Piping Plover	Jul 20-Sep 4			R	R
Killdeer *	year round	C	U	FC	FC
Sandpipers					
Black-necked Stilt	April 5-Sep 18		O	O	O
American Avocet	April 16-May 11; Aug 7-Oct 30	R	O	R	O
Greater Yellowlegs	Jun 27-May 14	FC	C	U	FC
Lesser Yellowlegs	Mar 1-May 31; Jun 26-Nov14	R	FC	U	U
Solitary Sandpiper	Mar22-April 30; Jun 27-Sep 26		O	U	O
Willet	Apr 21-May 11; Jul 4-Sep 25		R	R	R
Spotted Sandpiper	Apr 15-May 28; Jul 6-Sep 19		O	U	O
Upland Sandpiper	Apr 5-May 22; Jul 20-Sep 19		O	U	O
Whimbrel			R		
Long-billed Curlew				V	V
Hudsonian Godwit	Apr 14-May 17		O		
Marbled Godwit				R	
Ruddy Turnstone			R	R	R
Red Knot					R
Sanderling	Aug 14-Sep 19		R	R	R
Semipalmated Sandpiper	Apr 20-Jun 5; Jul 6-Sep 23		FC	FC	FC
Western Sandpiper	Apr 10-May 3; Jul 8-Sep 19		R	U	U
Least Sandpiper	Jul 8-May 15	O	FC	FC	FC
White-rumped Sandpiper	Apr 30-Jun 18		FC	FC	
Baird's Sandpiper	Mar 23-May 17; Jul 22-Sep 18		O	O	O
Pectoral Sandpiper	Mar 1-May 28; Jul 12-Oct 29	R	C	C	FC
Dunlin	Mar 14-May 28; Sep 14-Nov 29	R	O		O
Stilt Sandpiper	Mar 30-May 20; Jul 8-Oct 1		O	U	U
Buff-breasted Sandpiper	Apr 8-Apr 30; Aug 6-Sep 19		R	O	O
Short-billed Dowitcher	Jul 21-Oct 19		R	O	O
Long-billed Dowitcher	Feb 20-May 7; Jul 12-Dec 10	R	U	O	U
Wilson's Snipe	Aug 19-Apr 26	FC	FC	O	FC
American Woodcock	Oct 27-Feb 10	R	R		O
Wilson's Phalarope	Apr 14-May 23; Jul 20-Sep 19		O	O	R
Red-necked Phalarope	Hurricane Gustav (2008)				V
Skuas, Gulls, and Terns	**Occurrence Dates**	**Winter**	**Spring**	**Summer**	**Fall**
Jaeger sp.	Hurricane Gustav (2008)				V
Laughing Gull		R	R	R	
Franklin's Gull	Apr 10-Jun 5		O	R	R

Bonaparte's Gull		R	R		
Ring-billed Gull	Nov 11-Apr 8	O	R		R
Herring Gull			R		
Sabine's Gull	Hurricane Gustav (2008)				V
Caspian Tern	May 7-Sep 7		R	O	R
Royal Tern	Hurricane Gustav (2008)				V
Common Tern			R		R
Sooty Tern	Hurricane Gustav (2008)				V
Forster's Tern	Mar 8-May 28; Jun 26-Sep 15	R	O	O	R
Least Tern	May 14-Sep 9		O	FC	R
Black Tern	May 4-Jun 5; Jul 26-Sep 2		FC	R	R
Pigeons and Doves					
Rock Pigeon	Feb 18-Nov 13	R	R	R	R
Band-tailed Pigeon					V
Eurasian Collared-Dove	year round	O	O	O	O
White-winged Dove					R
Mourning Dove **	year round	FC	FC	FC	FC
Inca Dove *		R	R	R	R
Common Ground-Dove	Oct 19-Apr 6	R	R		R
Cuckoos					
Black-billed Cuckoo			R		
Yellow-billed Cuckoo *	Apr 24-Oct 1		U	U	O
Greater Roadrunner			R		
Owls					
Barn Owl *	year round	O	O	O	O
Eastern Screech Owl **	year round	O	O	O	O
Great Horned Owl **	year round	U	U	U	U
Barred Owl **	year round	FC	FC	FC	FC
Long-eared Owl		R			
Short-eared Owl	Nov 19-Mar 26	U	O		O
Nighthawks and Nightjars					
Common Nighthawk	May 1-May 31; Sep 5-Oct 12		O	E	O
Chuck-Will's-Widow			R	R	
Whip-poor-will			R		
Swifts and Hummingbirds					
Chimney Swift	Mar 30-Oct 19		U	O	O
Ruby-throated Hummingbird *	Apr 5-Sep 27		U	U	U
Kingfishers					
Belted Kingfisher	year round	U	U	U	U
Woodpeckers					
Red-headed Woodpecker *	year round	O	O	O	O
Red-bellied Woodpecker **	year round	U	U	U	U
Yellow-bellied Sapsucker	Oct 12-Mar 1	U	R		U
Downy Woodpecker **	year round	U	U	U	U
Hairy Woodpecker **	year round	U	O	O	O
Northern Flicker *	Sep 22-Apr 1	FC	U	R	FC
Pileated Woodpecker *	year round	U	U	U	U
Flycatchers	**Occurrence Dates**	**Winter**	**Spring**	**Summer**	**Fall**
Olive-sided Flycatcher	May 1-May 30; Aug 31-Sep 15		R	R	O
Eastern Wood Pewee **	Apr 16-Oct 19		U	U	U

Acadian Flycatcher **	Apr 27-Sep 15		U	U	O
Yellow-bellied Flycatcher			U		
Alder Flycatcher	May 9-May 20; Aug 14-Sep 14		O	O	O
Willow Flycatcher *	May 11-Sep 28		U	U	U
Least Flycatcher	Apr 28-May 21: Aug 1-Oct 8		O	O	O
Eastern Phoebe *	year round	U	U	U	U
Ash-throated Flycatcher		V	V		
Great-crested Flycatcher **	Apr 16-Sep 16		U	U	O
Great Kiskadee			V		
Western Kingbird			R		
Eastern Kingbird *	Apr 5-Sep 12		FC	U	O
Scissor-tailed Flycatcher *	Mar 29-Oct 29		U	U	U
Shrikes					
Loggerhead Shrike	Aug 11-Apr 23	U	U	O	U
Vireos					
White-eyed Vireo *	Mar 23-Oct 18		U	U	U
Bell's Vireo *	Apr 18-Sep 6		U	U	O
Yellow-throated Vireo **	Mar 17-Sep 16		U	U	O
Blue-headed Vireo	Apr 15-May 20; Sep 15-Nov 5		O		O
Warbling Vireo	Apr 24-May 10; Aug 1-Sep 27		O	R	O
Philadelphia Vireo	May 10-May 19		R		E
Red-eyed Vireo **	Apr 9-Sep 16		U	U	O
Jays and Crows					
Blue Jay **	year round	U	U	U	FC
American Crow **	year round	C	FC	FC	FC
Fish Crow **	year round	FC	U	U	U
Larks					
Horned Lark	Dec 18-Jan 24	O	R		E
Swallows					
Purple Martin	Feb 18-Sep 12	O	U	U	O
Tree Swallow *	Feb 28-Oct 22	R	U	U	O
Northern Rough-winged Swallow	Mar 11-Oct 22		U	U	U
Bank Swallow	Apr 17-May 28; Aug 22-Sep 19		U	O	O
Cliff Swallow	Mar 20-Sep 27		FC	FC	O
Cave Swallow				V	
Barn Swallow *	Mar 1-Oct 28	R	FC	FC	FC
Chickadees and Titmice					
Carolina Chickadee *	year round	U	U	U	U
Tufted Titmouse *	year round	U	U	U	U
Creepers and Nuthatches					
Red-breasted Nuthatch		E			R
White-breasted Nuthatch **	year round	O	O	O	O
Brown-headed Nuthatch *		E	R	E	E
Brown Creeper	Nov 7-Mar 27	O	O		O
Wrens	**Occurrence Dates**	**Winter**	**Spring**	**Summer**	**Fall**
Carolina Wren *	year round	U	U	U	U
Bewick's Wren	Oct 19-Mar 17	O	R		O
House Wren	Sep 9-May 4	O	O		O
Winter Wren	Oct 15-Mar 1	O	R		R
Sedge Wren *	Aug 14-May 12	U	U	O	FC

Marsh Wren	Sep 19-May 14	O	U		U
Kinglets					
Golden-crowned Kinglet	Oct 13-Mar 17	U	O		O
Ruby-crowned Kinglet	Sep 23-May 10	U	U		U
Gnatcatchers and Thrushes					
Blue-gray Gnatcatcher *	Mar 16-Oct 1	R	U	U	U
Eastern Bluebird *	year round	U	U	U	U
Gray-cheeked Thrush	Apr 15-May 15		O		
Swainson's Thrush	Apr 15-May 15		O		E
Hermit Thrush	Oct 8-Apr 23	U	U		U
Wood Thrush	Apr 15-May 21		O		E
American Robin	Oct 13-Apr 10	FC	O		FC
Mockingbirds and Thrashers					
Gray Catbird *	Apr 27-May 21; Sep 16-Oct 12		O	E	O
Northern Mockingbird **	year round	U	U	U	U
Sage Thrasher					V
Brown Thrasher **	Sep 11-Apr 30	O	O	R	U
Starlings					
European Starling	Sep 18-May 28	U	O	R	O
Pipits					
American Pipit	Oct 12-Mar 23	FC	O		FC
Sprague's Pipit	Oct 10-Oct 17		R		R
Waxwings					
Cedar Waxwing	Nov 6-May 20	O	FC		O
Warblers					
Golden-winged Warbler	Apr 25-May 10		R		E
Tennessee Warbler	Apr 17-May 17; Sep 14-Oct 25		U		O
Orange-crowned Warbler	Oct 8-Apr 2	O	O		O
Nashville Warbler	Apr 23-May 10; Sep 16-Nov 2		O		O
Blue-winged Warbler			R		
Northern Parula **	Apr 2-Oct 14		U	O	O
Yellow Warbler	Apr 23-May 31; Jul 29-Sep 30		U	U	U
Chestnut-sided Warbler	May 1-May 10		O		E
Magnolia Warbler	May 1-May 17		O		E
Yellow-rumped Warbler	Oct 8-May 4	U	U		U
Black-throated Green Warbler	Apr 13-May 14; Oct 8-Nov 4		O		O
Blackburnian Warbler	May 9-May 11		R		E
Yellow-throated Warbler *	Mar 25-Sep 4		O	O	R
Pine Warbler **	year round	O	U	O	O
Prairie Warbler **	Apr 18-Aug 13		O	O	E
Palm Warbler	Apr 25-May 4; Sep 29-Nov 15	R	O		O
Bay-breasted Warbler	April 25-May 30		R		E
Blackpoll Warbler	Apr 25-May 15		O		
Cerulean Warbler	Apr 25-May 20		R		
Black-and-White Warbler **	Mar 17-Sep 20		U	U	O
American Redstart	Apr 28-May 25; Sep 22-Oct 10		O		O
Prothonotary Warbler *	Apr 4-Aug 23		U	U	E
Swainson's Warbler	Apr 10-May 4		R	E	E
Northern Waterthrush	Apr 23-May 20; Aug 15-Sep 20		U	R	R
Louisiana Waterthrush	Mar 25-Sep 15		O	O	E

Ovenbird					R
Kentucky Warbler **	Apr 16-Sep 15		U	U	E
Mourning Warbler	May 10-May 21		O		E
Common Yellowthroat *	Mar 12-Nov 2	O	FC	FC	U
Hooded Warbler **	Apr 10-May 31		O	R	E
Wilson's Warbler	May 10-May 26; Aug 26-Oct 10		O	R	O
Canada Warbler	Apr 28-May 30		R		E
Yellow-breasted Chat *	Apr 16-Aug 23		U	U	E
Tanagers	**Occurrence Dates**	**Winter**	**Spring**	**Summer**	**Fall**
Summer Tanager **	Apr 10-Sep 27		U	U	O
Scarlet Tanager			R		
New World Sparrows					
Spotted Towhee		R	E		R
Eastern Towhee	Oct 29-Apr 12	U	O		O
Lark Bunting					V
Bachman's Sparrow	Apr 13-Jun 21		R	R	E
American Tree Sparrow	Nov 14-Jan 23	R			R
Chipping Sparrow	Mar 3-May 20; Sep 11-Dec 17	R	O	E	O
Clay-colored Sparrow	Apr 27-May 10; Sep 30-Oct 29		R		O
Brewer's Sparrow					V
Field Sparrow *	year round	FC	U	U	U
Vesper Sparrow	Oct 10-Apr 13	U	O		U
Lark Sparrow	Apr 1-Sep 2		O	O	R
Savannah Sparrow	Sep 27-May 18	C	FC		C
Grasshopper Sparrow	Apr 8-May 15; Jul 17-Nov 28	R	O	O	O
Henslow's Sparrow	Oct 15-Mar 7	R	R		R
LeConte's Sparrow	Oct 3-May 10	FC	U		FC
Nelson's Sharp-tailed Sparrow	Oct 8-Nov 2		R		O
Fox Sparrow	Nov 2-Mar 22	U	O		U
Song Sparrow	Oct 15-Apr 19	FC	U		FC
Lincoln's Sparrow	Apr 5-May 18; Sep 27-Dec 19	O	U		U
Swamp Sparrow	Oct 8-May 8	FC	U		FC
White-throated Sparrow	Oct 15-May 3	U	U		U
Harris' Sparrow	Nov 14-Feb 25	O	R		R
White-crowned Sparrow	Oct 10-May 7	C	FC		U
Dark-eyed Junco	Nov 2-Mar 22	O	O		U
Chestnut-collared Longspur					V
McCown's Longspur					V
Lapland Longspur	Nov 14-Feb 23	O			O
Smith's Longspur		R			
Snow Bunting					V
Grosbeaks and Buntings	**Occurrence Dates**	**Winter**	**Spring**	**Summer**	**Fall**
Northern Cardinal **	year round	FC	FC	U	FC
Rose-breasted Grosbeak	Apr 26-May 11; Sep 28-Oct 20		O		R
Blue Grosbeak *	Apr 10-Oct 13		U	U	O
Lazuli Bunting			V		V
Indigo Bunting *	Apr 17-Oct 29		FC	FC	FC
Painted Bunting **	Apr 20-Sep 12		U	U	O
Dickcissel *	Apr 19-Oct 21		C	C	U
Blackbirds and Orioles					

Bobolink	Apr 28-May 17; Sep 10-Nov 1		FC		R
Red-winged Blackbird *	year round	C	C	C	C
Eastern Meadowlark *	year round	C	FC	U	C
Western Meadowlark	Oct 21-Mar 20	O	O		O
Yellow-headed Blackbird	Apr 19-May 2; Sep 15-Oct 28		O		R
Rusty Blackbird	Nov 13-Mar 20	U	R		O
Brewer's Blackbird	Nov 13-Mar 21	U	O		O
Common Grackle *	Oct 19-Aug 20	FC	U	U	FC
Great-tailed Grackle *	year round	R	O	O	R
Brown-headed Cowbird *	year round	O	FC	FC	O
Orchard Oriole **	Apr 10-Sep 11		U	U	O
Baltimore Oriole *	Apr 23-Sep 16		O	O	R
Finches					
Purple Finch	Nov 2-Mar 28	R	E		O
House Finch	Oct 15-Nov 30	E	E		R
Pine Siskin	Sep 27-Apr 15	R	E		R
American Goldfinch	Aug 16-May 11	FC	U	O	FC
House Sparrow	year round	O	U	O	O

Occurrence Dates:
Period of usual occurrence (no dates are specified if there are very few records of occurrence)

Frequencies of Occurrence per Season within Dates Specified:
C = Common to Abundant (found regularly and in good numbers)
FC = Fairly Common(numbers fluctuate between common and uncommon)
U = Uncommon (usually found; occurs in low numbers)
O = Occasional (usually found a few times during the season)
R = Rare (seldom found this season; includes species outside their normal range occurring every 2-3 yrs)
V = Vagrant (outside normal range; not expected)
E = Expected (expected during this season but no records yet)

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