

# Appendix D – Biological Assessment



## Biological Assessment for the Revised Land and Resource Management Plan (Ouachita National Forest)

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## Introduction

The Revised Land and Resource Management Plan (Forest Plan) for the Ouachita National Forest (NF) provides broad, strategic direction for managing the land and its resources. It does not make project-level decisions, nor does it contain commitments to implement specific projects. Those decisions are made after more detailed analyses and further public comment. Site-specific project decisions must be consistent with the Forest Plan. In some cases, the plan may be amended to allow projects to be implemented that would otherwise be inconsistent with the plan. The Forest Plan was prepared according to the requirements of the National Forest Management Act (NFMA), the National Environmental Policy Act (NEPA), and other laws and regulations. The revised Forest Plan replaces the 1990 Amended Land and Resource Management Plan for the Ouachita NF.

The Forest Plan was developed to present the management alternative that, compared with other management alternatives, comes nearest to maximizing net public benefits, consistent with the resource integration management requirements of 36 Code of Federal Regulations (CFR) Sections 219.13 through 219.27. The accompanying Draft Environmental Impact Statement (DEIS) describes the analysis that was used in formulating the management alternatives and determining the preferred alternative for management of the Ouachita NF. Species on the Regional Forester's list of Sensitive species are covered under separate documentation in a Biological Evaluation.

## Forest Roles and Contributions

At the global and national scales, the Ouachita National Forest:

- sustains the largest expanse of native shortleaf pine ecosystems under one ownership and also harbors outstanding oak-dominated and mixed mesic forest and woodland systems
- provides opportunities for scenic driving on National Forest Scenic Byways, Scenic Highways, and a wealth of scenic unpaved roads
- provides high-quality recreation settings for the 192 miles of the Ouachita National Recreation Trail that are within the boundaries of the Forest, the Winding Stair National Recreation Area, and two designated Wild and Scenic Rivers
- together with the Ozark NF, is part of a recreation draw zone (a 75-mile straight-line radius from the borders of the two national forests) in which more than 5 million people live
- includes six designated wildernesses covering approximately 65,000 acres
- is one of the few sources for electronic grade, high-quality quartz in North America and a major world producer, and the leading U.S. producer of quartz crystal, for aesthetic and jewelry uses

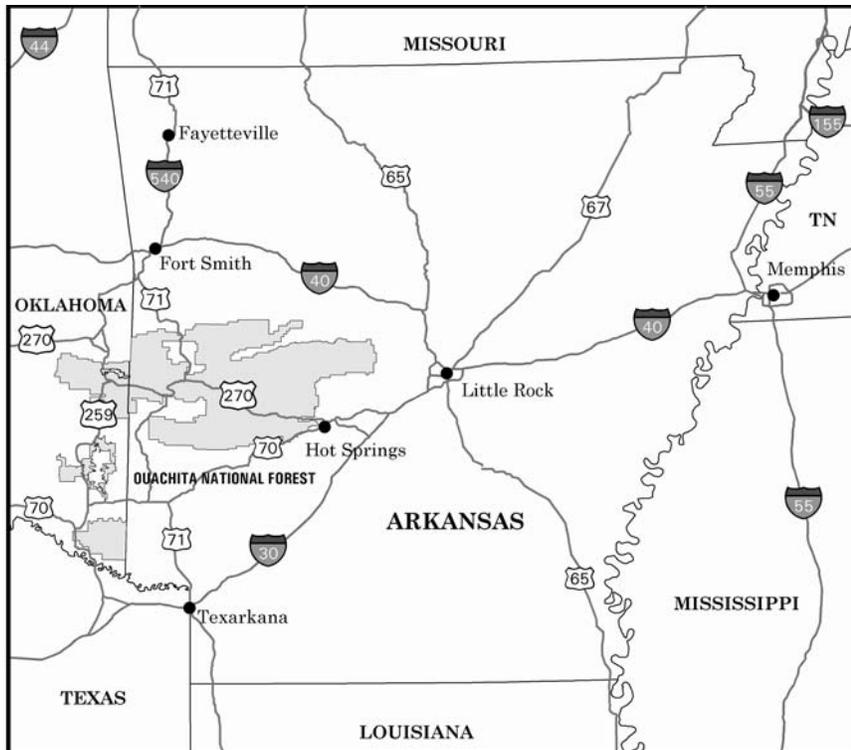
- is thought to have the largest concentration of prehistoric mines (novaculite mines) in North America
- is home to a wealth of native biodiversity (plants, animals, natural communities), including at least five salamander species, seven fish species, 13 crayfish species, and 15 plant species that are endemic to the Ouachita Mountains; the Forest also provides the only breeding and foraging habitat for the largest population of the Endangered Red-cockaded Woodpecker in the Ouachita Mountains and foraging and potential breeding habitat for the only other population
- conserves one archeological site and 90 buildings/structures on the National Register of Historic Places and over 1,400 sites eligible to be included on the National Register.

On regional and local scales, the Ouachita National Forest:

- contains diverse habitats important to maintaining populations of many native plant, fish, and animal species
- conserves an important, 16.5-mile segment of the Glover River, the last free-flowing river in Oklahoma, and almost two miles of the Mountain Fork River as designated Critical Habitat for the Threatened leopard darter
- is an important source of high-quality wood products, especially shortleaf pine sawtimber, for local and regional economies
- is one of the few large areas in Arkansas or Oklahoma where access for hunting is free and opportunities to hunt wild turkey, white-tailed deer, gray squirrel, and black bear are good to excellent
- provides high-quality recreation settings for hiking, mountain biking, and horseback riding on more than 600 miles of trail; motorized use on hundreds of miles of roads and about 100 miles of trails; and fishing in hundreds of miles of clear streams and dozens of lakes and ponds
- is the primary place of origin for much of the surface water that supplies communities in the Ouachita Mountains and is an important source of water for central Arkansas (via Lake Winona); lands of the Ouachita NF surround the source of potable water (Broken Bow Lake) for a large area in southeastern Oklahoma.

## **Plan and Analysis Area Location**

The Ouachita NF is located in western Arkansas and southeastern Oklahoma and includes nearly 1.8 million acres of federally managed land, shown on the vicinity map (Figure 1). The Forest is located within Ashley, Garland, Hot Spring, Howard, Logan, Montgomery, Perry, Pike, Polk, Saline, Scott, Sebastian, and Yell Counties in Arkansas and LeFlore and McCurtain Counties in Oklahoma.



**Figure 1. Ouachita National Forest Vicinity Map**

## Consultation History

Formal consultation requests by the Forest Service have been accepted in accordance with Section 7(a)(2) of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). Following is a brief summary of information relevant to the formal consultation process:

June 9, 1994 – US Fish and Wildlife Service (USFWS) letter of concurrence with the request of the Ouachita NF to modify the biological opinion (BO) of January 10, 1994, concerning impacts of ongoing forestry management practices on the Ouachita and Ozark-St. Francis NF's on the endangered American Burying Beetle (*Nicrophorus americanus*).

May 21, 1999 - USFWS in Vicksburg completed the biological opinion on the effects of the forest management on the Indiana bat (*Myotis sodalis*). The reasonable and prudent measures identified in the BO are incorporated in this proposed treatment.

July 9, 2002 – USFWS transmitted the biological opinion pursuant to Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), on the USDA Forest Service's proposed removal of the existing forest road 53000 low-water crossing in McCurtain County, Oklahoma.

January 13, 2003 – Steve Osborne was hired as the USFWS employee to work as liaison with the FS on plan revision issues that deal with endangered species and ecosystems that affect endangered species. Since that time, there has been an almost continuous dialogue between FS employees involved in plan revision and USFWS employees responsible for species and systems that could be affected by

plan revision. Other USFWS employees that were involved with consultation include Allan Mueller, Chris Davidson, David Campwerth, Jim Besley, Lindsey Lewis, Lisa Irwin, Marge Harney, Melvin Tobin, and Mitch Wine from the USFWS office in Conway, Arkansas, and Chris O'Meilia, Hayley Dikeman, Richard Stark and Steve Hensley from the USFWS office in Tulsa, Oklahoma. Coordination with the USFWS liaison has included numerous meetings, phone calls, and e-mails pertaining to threatened and/or endangered species and their viability on the forest.

Additional information concerning threatened and/or endangered species was gained at two agency partner meetings on plan revision. These meetings resulted in collaborative comment letters to the Ozark-St. Francis and Ouachita National Forests from the agencies involved. Partner Meeting dates were April 29, 2004 and May 2, 2005. Attendance included the Arkansas and Oklahoma Field Offices of the Fish and Wildlife Service along with land management professionals with threatened and/or endangered species experience from The Nature Conservancy, Arkansas Game and Fish Commission, Oklahoma Department of Wildlife Conservation, and Arkansas Natural Heritage Commission.

## **Proposed Management Actions**

The Forest Service proposes to revise the Land and Resource Management Plan (Forest Plan) for the Ouachita NF. The purpose of the Forest Plan is to provide long-term, strategic direction for natural resource management on the Forest. Projects designed to implement the direction of the Forest Plan are undertaken only after additional, project-specific environmental consideration and public involvement.

The Forest Service published the current Forest Plan for the Ouachita National Forest in 1990 (replacing the 1986 Forest Plan). The National Forest Management Act (NFMA) calls for such plans to be revised every 10 to 15 years. The current Forest Plan was 15 years old in March 2005 and is in need of revision to comply with NFMA. The need to revise this Forest Plan is also driven by the changing conditions and expectations identified in the Ozark-Ouachita Highlands Assessment, the Southern Forest Resource Assessment, and ongoing monitoring and evaluation results specific to the Ouachita NF.

In comparison to the current Forest Plan (Alternative A), the preferred alternative would place increased emphasis on active management for ecological conditions to sustain diversity and ecosystem health in each of the ecological system types identified in the EIS.

**Ecosystem Health and Sustainability:** In MAs 16-Lands surrounding Lake Ouachita and Broken Bow Lake, 17-Semi-Primitive Areas, and 19-Winding Stair Mountain National Recreation Area (and Associated Non-Wilderness Designations), responsiveness to ecosystem health would be accomplished through activities primarily driven by management for recreation (e.g., visual quality). Treatments of the Pine-Oak Forest, Pine-Oak Woodland, Shortleaf Pine/Bluestem Grass Woodland, West Gulf Coastal Plain Pine-Hardwood Forest, and Ouachita Dry to Mesic Oak Forest would allow a greater intensity of activities within Pine-Oak, as well as hardwood-dominated communities for ecosystem health. Projected prescribed burning would increase from 125,000 average annual acres (current) to approximately 180,000 average annual acres.

**Land Allocation:** Additions to three existing wilderness area would be recommended: a 620-acre block of National Forest land would be recommended as an addition to Flatside Wilderness in Arkansas; 77 acres would be recommended as an addition to Poteau Mountain Wilderness (East Unit); and 1,096 acres would be recommended as an addition to Upper Kiamichi Wilderness in Oklahoma. Streamside Management Areas would be maintained, but limited cutting to meet ecosystem health objectives would be allowed. Areas considered suitable for timber production would be approximately 1,009,887 acres, which is close to the current Forest Plan.

**Public Access and Recreation:** Open road density objectives would be modified to reflect a more realistic approach to areas that have a high density of non-National Forest System roads. Other access would be as in current Forest Plan, except that off-road motorized access would be on designated routes, not cross-country. The Scenery Management System would be implemented, with greater emphasis than the current Forest Plan on actively managing high traffic corridors and lakes for enhanced scenery. Management for scenic integrity may affect prescribed fire locations. Other vegetation management would be visually mitigated. Vegetation management would particularly promote “watchable wildlife,” including important birding areas.

**Relationship to Communities:** Under the preferred alternative, there would be potential for greater timber production, reduced fuels in the wildland-urban interface, and more impacts from smoke than the current Forest Plan. The Forest would continue to seek to improve economic relationships with communities and to seek other opportunities for coordination, including addressing opportunities represented by the Healthy Forest Initiative.

**Table 1. Management Areas:** The revised Forest Plan allocates lands and waters to management areas (MAs), each of which is defined by particular desired conditions and management standards.

MA	Descriptive Title	Approximate Acres (K=1,000)
1	Wilderness	70K
2	Special Interest Areas	26K
3	Developed Recreation Areas	5K
4	Research Natural Areas and National Natural Landmarks	2K
5	Experimental Forests	6K
6	Rare Upland Communities	48K
7	Ouachita Seed Orchard	<1K
8	Special Uses/Administrative Sites	<1K
9	Water and Riparian Communities	278K
14	Ouachita Mountains, Habitat Diversity Emphasis	767K
15	West Gulf Coastal Plain, Habitat Diversity Emphasis	8K
16	Lakes (Lake Ouachita/Broken Bow Lake)	87K
17	Semi-Primitive Areas	130K
19	Winding Stair Mountain National Recreation Area (and Associated Non-Wilderness Designations)	80K

MA	Descriptive Title	Approximate Acres (K=1,000)
20	Wild and Scenic River Corridors	26K
21	Old Growth Restoration	70K
22	Renewal of the Shortleaf Pine/Bluestem Grass Ecosystem and Red-cockaded Woodpecker Habitat	173K
Total Number of Acres		1,778K

**Table 2. Proposed and Probable Activities (Including Timber Sale Program):** The preferred alternative includes the following projected management activities.

Activity	Unit of Measure	Range of Proposed/ Probable Annual Activity
Allowable Sale Quantity	Million cubic feet/year	27
Timber offered for sale	Million cubic feet/year	20-30
Regeneration harvest (by modified seedtree/shelterwood methods)	Total Acres	5,000-6,000
Management Area 14- Ouachita Mountains, Habitat Diversity Emphasis	Acres	4,000-4,700
Management Area 15- West Gulf Coastal Plain, Habitat Diversity Emphasis	Acres	140
Management Area 17-Semi-Primitive Areas	Acres	250
Management Area 21-Old Growth Restoration	Acres	160
Management Area 22-Renewal of the Shortleaf Pine/Bluestem Grass Ecosystem and Red-cockaded Woodpecker Habitat	Acres	1,000-1,200
Other MAs	Acres	250
Uneven-aged management	Total Acres	9,000-10,000
Management Area 14-Ouachita Mountains, Habitat Diversity Emphasis	Acres	7,200-7,850
Management Area 16-Lakes (Lake Ouachita/Broken Bow Lake)	Acres	1,000-1,300
Management Area 19-Winding Stair Mountain National Recreation Area (and Associated Non-Wilderness Designations)	Acres	800-850
Commercial Thinning	Total Acres	20,000-25,000
Management Area 14-Ouachita Mountains, Habitat Diversity Emphasis	Acres	10,000-13,700

Activity	Unit of Measure	Range of Proposed/ Probable Annual Activity
Management Area 15- West Gulf Coastal Plain, Habitat Diversity Emphasis	Acres	1,000
Management Area 17-Semi-Primitive Areas	Acres	400-500
Management Area 21-Old Growth Restoration	Acres	1,500-1,600
Management Area 22-Renewal of the Shortleaf Pine/Bluestem Grass Ecosystem and Red-cockaded Woodpecker Habitat	Acres	7,000-8,200
Midstory reduction	Total Acres	4,325-5,000
Management Area 21-Old Growth Restoration	Acres	500-600
Management Area 22-Renewal of the Shortleaf Pine/Bluestem Grass Ecosystem and Red-cockaded Woodpecker Habitat	Acres	3,500-3,725
Other MAs	Acres	325-500
Watershed improvement and maintenance	Acres	30-60
Arterial/collector roads reconstructed	Miles	15-20
Local roads constructed	Miles	5-10
Roads decommissioned	Miles	10-20
Trail maintenance (non-motorized)	Miles	300-350
Heritage resource survey	Acres	9,000-10,000
Active range allotments	Number	≤17
Prescribed burning	Acres	80,000-250,000
Management Area 6-Rare Upland Communities	Acres	5,000-10,000
Management Area 14-Ouachita Mountains, Habitat Diversity Emphasis	Acres	25,000-110,000
Management Area 17-Semi-Primitive Areas	Acres	8,000-22,000
Management Area 21-Old Growth Restoration	Acres	8,000-25,000
Management Area 22-Renewal of the Shortleaf Pine/Bluestem Grass Ecosystem and Red-cockaded Woodpecker Habitat	Acres	27,000-70,000
Other MAs	Acres	7,000-13,000

**Potential Project-Level Forest Management Activities:** Forest management activities most commonly occurring and some of the potential activities that could occur at the project-level that are used in this Biological Assessment to determine effects to Threatened and Endangered species on or potentially occurring on the Ouachita NF are

listed in the following table. Each Threatened or Endangered species known to occur on the Ouachita NF will be evaluated as to the effects of these activities.

**Table 3. Project-Level Forest Management Activities within Categories**

<b>Prescribed Fire</b>
(Community Health, Fuel Reduction, Site Prep)
<b>Timber Harvest &amp; Regeneration Activities</b>
Modified Seedtree or Shelterwood
Single Tree Selection
Group Selection
Lt/Med/Heavy Thinning
Mid-Story/Over-Story Thinning/Wildlife Stand Improvement
Clearcut (restore native species or rehabilitation)
<b>Forest Regeneration Site Preparation</b> (Singular or in combinations of)
Chainsaw
Rip
Chop
Shear
<b>Herbicide</b>
(Site Preparation, Invasive species)
<b>Construction/Reconstruction/Maintenance</b>
Roads (Temporary & Permanent)
Firelines
Trails (OHV, Equestrian, Biking, Hiking, Multi-Use)
Wildlife Openings
Wildlife Ponds
<b>Other Ground Disturbing Activities</b>
Skidding during timber harvest
Mining operations (Gravel or Mineral)
<b>Decommissioning and Rehabilitating</b>
Roads
Trails
Recreation Areas

**Forest-wide Resource Management Conservation Measures:** The Forest Plan presents standards for planning and implementing projects. This set of standards—the rules against which practices are measured—and other guidance provide the technical and scientific specifications that must be met to complete acceptable projects; to ensure compliance with applicable laws, regulations, Executive Orders, and policies; to resolve management issues and concerns; and to direct management practices toward achievement of desired conditions.

The forest-wide standards listed here either directly or indirectly provide conservation and/or protection for natural resources and ecosystem health forest-wide. The following list does not include all the standards in the Forest Plan, but does contain those most pertinent to protection, conservation or enhancement of the federally listed species’

habitat conditions considered here. Those standards that are particular to a certain listed species are shown in the separate section concerning that species.

### **Soil and Water Resources**

- SW001 Allow heavy equipment operations on hydric soils, soils with a **severe** compaction hazard rating, and floodplains with frequent or occasional flooding hazard only during the months of July through November. Operations during December through June are allowed with the use of methods or equipment that do not cause excessive soil compaction. This standard does not apply to areas dedicated to intensive use, including but not restricted to administrative sites, roads, primary skid trails, log decks, campgrounds, and special use areas.
- SW002 Allow heavy equipment operations on soils that have a **high** compaction hazard rating only during the months of April through November. Operations December through March are allowed with the use of methods or equipment that do not cause excessive soil compaction. This standard does not apply to areas dedicated to intensive use, including but not restricted to administrative sites, roads, primary skid trails, log decks, campgrounds, and special use areas.
- SW003 Soils will be managed to maintain a minimum of 85 percent of an activity area in a condition of acceptable soil productivity following land management activities. This standard does not apply to lands dedicated to other uses such as administrative sites, roads, recreation trails, campgrounds and special use areas. If more than 15 percent of a project area exceeds one or more of the five following thresholds, then future management must have no additional detrimental effect unless natural recovery or mitigation measures have taken place:
- (1) bulk density will not increase more than 15 percent over the undisturbed level in the upper eight inches of soil
  - (2) soil organic matter will remain at least 85 percent of the natural or undisturbed total in the upper six inches of the soil
  - (3) soil loss from management actions will not exceed the estimated Forested T-factor for each soil or soil map unit, based on the cumulative time period between soil disturbing management actions
  - (4) soil puddling (tire track rutting) will not exceed six inches deep
  - (5) soil displacement will not exceed two inches or one-half the humus-enriched "A" horizon, whichever is less, over a surface area greater than 100 square feet that is more than ten feet wide.
- SW004 Erosion control measures will be applied within 30 days of completion of soil disturbing activities and within 15 days or less if such activities are conducted within SMAs adjacent to river reaches designated as Critical Habitat for leopard darter. Temporary erosion measures will be applied prior to completion of activities during December through February and during other times if operations are suspended for periods exceeding 30 days or when expected weather conditions indicate the need to control sediment.
- SW005 Areas of exposed soil must be stabilized. Where natural stabilization (such as needle and leaf fall, or natural vegetative establishment) is not expected to

stabilize the area within 30 days of completion of soil disturbing activities, use either native and/or non-invasive, non-native vegetation as a temporary protective cover until native vegetation occupies the site.

- SW006 Maintain rehabilitated areas until stabilized with a minimum effective ground cover of 60 percent on slope gradients up to 15 percent, 70 percent on slopes having 15 to 35 percent gradients, and 80 percent on slopes greater than 35 percent gradient.
- SW007 During temporary disturbance activities in which the soil is altered and displaced (through excavation averaging 2 feet deep or greater) over an area of one-tenth acre or more, the topsoil will be stockpiled for later use as a top dressing during reclamation or similarly redistributed through project design. The surface 6 inches of soil will be stockpiled. This standard applies to projects such as oil and gas exploration, surface mining, and pond construction.
- SW008 For erosion control, plan, install, and maintain drainage structures in roads, skid trails, and firelines using spacing guidelines from state Best Management Practices (where appropriate) and/or Forest Service directives. For waterbar (surface drain) spacing guidelines use Table 3.1. (Also see standards under Transportation and Timber Harvest Administration.)

**[Forest Plan] Table 3.1 Guidelines for Waterbar Spacing**

Grade (percent)	Maximum Distance Between Surface Drains or Natural Drainage Breaks (feet) <sup>1</sup>
0 – 2	296
2 – 4	192
4 – 6	154
6 – 8	134
8 – 10	120
10 – 12	109
12 – 14	97
14 – 20	90
20 – 25	66

<sup>1</sup>Site specific stabilization/cross drainage measures prescribed by a watershed specialist on these or steeper slopes may supercede these distance criteria.

- SW009 Protect public water source areas when pesticide applications or soil disturbing activities are proposed within designated public water source areas as shown in Appendix (Plan). The source water manager/operator will be notified during the scoping process.

### **Mine and Cave Habitat**

TE002 Proposed mining operations affecting abandoned mine adits and shafts or natural dens and caves that could be considered suitable habitat for federally Threatened and Endangered species or Southern Region Sensitive species must include conservation measures to protect the species and habitat.

### **Aquatic Proposed, Endangered, Threatened, Sensitive (PETS) Species**

TE003 As part of project planning within sixth level watersheds where aquatic Proposed, Endangered, Threatened, Sensitive (PETS) species occur or are anticipated to occur downstream from proposed ground-disturbing management activities, consider whether additional measures (e.g., wider Streamside Management Areas) are warranted to conserve habitat for these species.

### **Wildlife Habitat**

WF003 Provide for and designate areas for mast production at the approximate rate of 20 percent of each project area. Hardwood and hardwood-pine forest types, age 50 and older, comprise this component.

WF004 Retain clumps of deciduous trees at a rate of one-half acre clump per 20 acres of regeneration cutting by even-aged methods in order to create den trees. Where possible, locate clumps around existing den trees. In addition, existing den trees will not be felled unless necessary for insect or disease control or for safety.

WF005 Where timber is harvested, retain or create at least two snags per acre, minimum 12-inch diameter at breast height (dbh) with an objective of 16-inch dbh or larger. Where naturally occurring snags of this size are unavailable or cannot be created, retain or create snags near the required size. Standing snags will not be felled, unless necessary for insect or disease control or to provide for safety.

WF006 Retain or develop mature growth pine habitats (80 years old or greater) and mature growth hardwood habitats (100 years old or greater) at a rate of five percent of each broad cover type within each project analysis area.

### **Forest Regeneration**

FR002 In pine management types, maintain a minimum of 10 percent hardwood in each stand where possible, and strive to achieve 20 percent, with a maximum not to exceed 30 percent. Within this hardwood component and, where available, retain large overstory hardwoods distributed throughout the stand at a minimum rate of five square feet BA/Acre. Maintain this composition through the life of the stand. Base hardwood component on composition existing prior to regeneration.

FR003 In mixed pine-hardwood forests subject to timber harvesting, maintain between 30 and 50 percent hardwood in each stand, including large overstory hardwoods distributed throughout the stand.

FR004 Keep a minimum distance of one-eighth mile between regeneration areas that are still considered openings. An even-aged regeneration area will no longer be considered an opening when the re-established stand has reached approximately 20 percent of the height of the tallest adjacent stand. Normally, this would occur at 10 years of age.

#### **Timber Harvest Administration**

TH001 Normal operating season is nine months (March 1–November 30), except for the Tiak Ranger District, where the operating season is six months (June 1–November 30).

TH006 Do not use unscoured drainageways upstream of defined channels for temporary roadways, landings, or skid trails. Crossings are allowed.

TH007 Culverts, bridges or reinforced crossings may be required on temporary roads at all points where it is necessary to cross protected stream courses. Ford crossings may be permitted with written authorization in locations containing exposed bedrock or rock-fragment bottoms, or where streams can be protected with clean rock aggregate or other suitable treatment measures. In no case will temporary culverts involving the placement of fill material in stream courses be allowed on streams identified as important for fisheries unless the forest fisheries biologist determines washed rock fill may be safely used.

TH009 Upon termination of management activity, obliterate and revegetate temporary roads. Effectively block them to normal vehicular traffic within 50 feet of the beginning of the road and include dips and/or waterbars for erosion control. See Table 3.1 for recommended spacing of waterbars. Remove all temporary crossings. Restore the natural contours and slope on temporary road segments that have grades of 14 percent or greater.

#### **Herbicide Use**

HU003 To minimize potential effects of herbicide use, whenever possible, use individual stem treatments, directed spraying, and crop tree release rather than broadcast or grid applications. Do not use broadcast or grid applications within Streamside Management Areas (see MA 9 for other restrictions.)

HU004 Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment. Herbicides that are not soil-active will be used in preference to soil-active ones when the vegetation management objectives can be met.

HU007 Soil-active herbicides will not be used within a 50 foot buffer of the dripline of trees that are located within the Streamside Management Area (SMA) except for treatments designed to control invasive and/or exotic species within the SMA.

HU008 With the exception of treatments designed to release designated vegetation selectively resistant to the herbicide proposed for use or to prepare sites for planting with such vegetation, no soil-active herbicide will be applied within 30 feet of the drip line of non-target vegetation specifically designated for retention

(e.g., den trees, hardwood inclusions, adjacent untreated stands) within or next to the treated areas. Chemical side pruning of trees is allowed, but movement of herbicide to the root systems of non-target plants must be avoided.

- HU009 Prohibit use of herbicides in the immediate vicinity of Endangered, Threatened, or Proposed plants. In areas occupied by sensitive plant species, use herbicides only where site-specific environmental analysis and biological evaluation conclude that the potential benefits of herbicide use significantly outweigh the potential negative effects. To protect Ozark chinquapin from direct herbicide application, stems will be individually flagged or otherwise marked in the field by qualified personnel.
- HU010 For treatments outside of SMAs, the following buffers will be used unless a site-specific analysis supports use within the designated buffer:
- 30 foot buffer from undefined drainages.
  - 200 foot buffer from any public or domestic water source.

### **Transportation**

- TR001 Construct roads to minimum standards required to meet resource management needs and to protect environmental resources. Ensure good road drainage with a combination of properly constructed and well spaced wing ditches, broad-based dips, rolling dips, culverts, and/or bridges. Road diversion ditches (lead off ditches and wing ditches) and gradients will be designed to minimize off-site erosion and sedimentation from runoff. Outlets will be located on undisturbed forest soil or otherwise treated to minimize erosion and sedimentation. Outlets must not connect directly with defined stream channels. Road diversion ditches should be constructed so water will be dispersed and not cut channels across the SMA. Provide out-fall protection if cross drains, relief culverts, wing ditches, and leadoff ditches discharge onto erodible soils or over erodible fill slopes. Use adequate sized culverts to carry the anticipated flow of water.
- TR003 All new stream crossings will be constructed so that aquatic organism passage is not impaired and so that the natural flow regime is not significantly altered. Reconstruction of all stream crossings will consider aquatic organism passage and incorporate structures to aid such passage, where practical.
- TR005 For wildlife purposes, the optimal total open road density is 1.0 mile per square mile or less for all MAs except MAs 1 and 4 (where the desired density is zero open roads per square mile) and MAs 16, 17, 19, and 21 (where the desired density is 0.75 miles of open road per square mile or less during critical periods for wildlife, i.e., March to August). Include all open roads (permanent, local arterial and collector roads, regardless of jurisdiction) and Off-Highway Vehicle (OHV) trails in initial calculations; for calculating road density, a seasonally (March to August) closed road will be treated as a closed road.
- In analysis areas or subwatersheds where the current open road density is 1.0 mile per square mile or less, do not exceed 1.0 mile per square mile (do not exceed 0.75 mile of open road per square mile in MAs 16, 17, 19, and 21 where that density of open roads currently exists).

- Where the current total open road density is greater than optimal, recalculate using only roads and OHV trails under Forest Service jurisdiction. Analysis areas or subwatersheds will be examined, using a roads analysis process, for opportunities to reduce the density of open roads and OHV trails under Forest Service jurisdiction.
- TR007 Avoid road locations in habitats of Proposed, Endangered, Threatened and Sensitive species, woodland seeps, glades and other identified specific natural plant communities. When road location outside of these areas is infeasible, mitigation is required.
- TR015 Locate fords where substrate conditions will support the designed use. Maintain stream pattern and channel geometry when modifying a crossing.
- TR016 If crossings and culverts are removed, stream banks and channels will be restored to a natural size and shape.
- TR017 Structures such as fences, trails, and roads will be designed and built so that they minimize movement barriers and hazards for wildlife.

#### **Land Administration**

- LA003 Landownership adjustments:
- will not dispose of habitat for Threatened or Endangered species (or those Proposed for listing) within the boundaries of the national forest except with another agency with equivalent responsibility for Proposed, Threatened or Endangered species;
  - will not dispose—or will result in net gains— of habitat for (or populations of) Southern Region Sensitive species and unique or rare natural communities on national forest lands; and
  - will not dispose of significant historical or archeological sites within the boundaries of the national forest except with another federal or state agency or a tribal government with equivalent responsibility for heritage resources.

#### **Special Uses**

- SU001 Road locations, utility corridors, or oil and gas pipelines in habitats of Proposed, Endangered, Threatened, or Sensitive species and/or identified, specific (rare) natural plant communities such as woodland seeps and glades will be avoided. When avoidance or complete protection is infeasible, losses will be mitigated.
- SU002 A special forest product permit (not a special use permit) is required for scientific collection of plants, and the permit must be approved by the Forest Supervisor.
- SU003 Permits for personal use of small amounts of special forest products, including medicinal plants, moss, lichens, and grapevines, may be issued. A sustainability assessment must be completed before a permit or contract can be issued for special forest products in amounts beyond personal use.

- SU004 New communication towers will be self-supporting and will be designed to mitigate collision impacts to bats and migratory birds. When authorized towers are reconstructed or replaced, the replacement tower will be self-supporting and designed to mitigate collision impacts to bats and migratory birds.
- SU005 Height of towers will be less than 200 feet above natural ground level. When authorized towers are reconstructed or replaced, the replacement tower will be less than 200 feet above natural ground level. An exception to the height limitation may be granted by the Forest Supervisor, if allowing an increase in height would result in placement of fewer towers. The applicant must prove that the requested height is the minimum necessary to provide communication service. Co-location of communication devices on the same towers will be encouraged.

**Management Area 9 (Water and Riparian Communities)**

- 9.01 Table 3.09 provides minimum widths of protected areas adjacent to bodies of water and on each side of perennial streams and other streams with defined channels that are at least one foot wide and three inches deep. The minimum width adjacent to edges of perennial streams, woodland seeps/springs and the banks of lakes and ponds equal to or greater than one-half acre is 100 feet measured horizontally. The minimum width adjacent to other streams with defined channels and ponds less than one-half acre is 30 feet measured horizontally.

**[Forest Plan] Table 3.09 Minimum Width of Streamside Management Areas, by Slope Class<sup>1</sup>**

Type of SMA	0-5%	5–15% slope	15–35% slope	35%+ slope
	<i>Horizontal distance from both sides of stream bank or from banks of spring/lake/pond is shown. Distances are shown in feet.</i>			
<b>Perennial stream; woodland seep/spring; lakes and ponds equal to or greater than ½ acre</b>	100	100	125 <sup>2</sup>	150 <sup>3</sup>
<b>Other defined channel; ponds less than ½ acre</b>	30	50	75 <sup>4</sup>	100 <sup>5</sup>

<sup>1</sup> Include only the area to the top of the slope when the slope adjacent to the stream is shorter than the width shown; however, always protect at least 100 feet on either side of perennial streams and 30 feet on either side and above other streams with defined channels.

<sup>2</sup> Approximate slope distance is 129 feet.

<sup>3</sup> Approximate slope distance is 159 feet.

<sup>4</sup> Approximate slope distance is 77 feet.

<sup>5</sup> Approximate slope distance is 106 feet.

**[Forest Plan] Table 3.10 Activities within Streamside Management Areas**

Permitted		Not Permitted Throughout the SMA
≤100 feet from perennial streams, woodland seeps/springs and bodies of water equal to or greater than one-half acre ≤30 feet from other streams with defined channels and ponds less than one-half acre in size	>100 feet from perennial streams, woodland seeps/springs and bodies of water greater than one-half acre > 30 feet from other streams with defined channels and ponds less than one-half acre in size	
Fell trees or create snags for enhancement of riparian or Threatened/Endangered/Sensitive species habitat.	Wildlife Stand Improvement; selection cuts or thinning to accomplish wildlife objectives.	Wheeled or crawler vehicles outside designated crossings (with exceptions <sup>1</sup> ).
Tree cutting to reduce vulnerability to insect/disease pests and to restore native vegetation (e.g., in loblolly pine plantations). Felling and cable skidding of timber with minimal soil disturbance.	Thinning to restore native vegetation. Felling and cable skidding of timber with minimal soil disturbance.	Log loading areas.
Control of Southern Pine Beetle infestations – tree felling	Control of Southern Pine Beetle infestations – felling and removal	Livestock distribution and convenience

Permitted		Not Permitted Throughout the SMA
<p>≤100 feet from perennial streams, woodland seeps/springs and bodies of water equal to or greater than one-half acre</p> <p>≤30 feet from other streams with defined channels and ponds less than one-half acre in size</p>	<p>&gt;100 feet from perennial streams, woodland seeps/springs and bodies of water greater than one-half acre</p> <p>&gt; 30 feet from other streams with defined channels and ponds less than one-half acre in size</p>	
permitted; removal permitted with cable skidding (minimize soil disturbance) only if necessary for control.	permitted with cable skidding and minimal soil disturbance.	structures (salting and dusting facilities, corrals, etc.) and feeding areas.
Cutting individual trees for safety or to enhance visual quality within administrative sites, developed recreation areas and recreational lakes.	Cutting individual trees for safety or to enhance visual quality within administrative sites, developed recreation areas and recreational lakes.	Mechanical site preparation or ripping.
Use of aquatic approved pesticides for treatment of invasive non-native and nuisance species. <sup>2</sup>	Use of aquatic approved pesticides <sup>2</sup> for treatment of invasive non-native and nuisance species.	
Non-motorized trails, boat and fishing docks, launching ramps/areas and swimming beaches.	Non-motorized trails, boat and fishing docks, launching ramps/areas and swimming beaches.	Recreation construction (with exceptions; see permitted activities).
CUS, wildlife and rough reduction prescribed burns.	CUS, wildlife and rough reduction prescribed burns.	Site preparation burning. <sup>3</sup>
Road reconstruction and maintenance. <sup>4</sup>	Road construction, reconstruction, and maintenance. <sup>4</sup>	
Temporary roads and skid trails at designated crossings.	Temporary roads and skid trails at designated crossings.	

<sup>1</sup>Exceptions are wildfire suppression, stream habitat enhancement, road reconstruction, and prescribed burning (for control line construction criteria, see Standard 9.23).

<sup>2</sup>Limited use of terrestrial vegetation control herbicides is also permitted; see Standard 9.13.

<sup>3</sup>Except in cases where backing fires can be used so that not all surface litter is burned or vegetation killed.

<sup>4</sup>Road construction and reconstruction is permitted when there is no alternative route that is less environmentally damaging or where other routes would involve prohibitive cost or would clearly not be in the best public interest. Roads and crossings are to be located and designed to avoid unacceptable environmental impacts and maintain or restore aquatic organism passage.

## **Fisheries**

- 9.03 Ponds less than one-half acre in size will not be stocked with fish to provide predator-free breeding habitat for amphibians, except at developed recreation and designated areas.
- 9.04 Lakes and ponds equal to or greater than one-half acre may be fertilized on a case-by-case basis when it has been determined that the overflow from the waterbody will not negatively impact stream fisheries, Lake Ouachita, or Broken Bow Lake and that state water quality criteria are not exceeded.
- 9.05 Stocking of any non-native aquatic species requires Forest Supervisor approval and appropriate state agency approval/permits. Non-native species stocking guidelines of appropriate professional societies will be consulted.
- 9.06 Stocking of rainbow trout in the Little Missouri River system will be evaluated on an annual basis. No more than 15,000 trout per year will be stocked in this planning period.
- 9.07 With the exception of situations covered by 9.05 and 9.06, streams will be managed for native fish populations.

## **Livestock Grazing**

- 9.08 Restrict grazing in the Streamside Management Area where resource damage is occurring.
- 9.09 Develop range watering sources outside of the riparian area.
- 9.10 Permit grazing of areas where a usable forage resource exists and negative impacts on water quality are within allowable limits.

## **Water Resources**

- 9.11 Avoid adverse impacts (long-term and short-term) associated with the occupancy and modification of floodplains. Destruction, loss, or degradation of wetlands will be avoided to the extent practicable, minimized or appropriately mitigated. (EO 11990 and EO 11998)
- 9.12 Water will not be diverted from streams or lakes and perennial streams will not be impounded on National Forest System lands when an instream flow needs or water level assessment indicates the diversion or impoundment would adversely affect stream processes, aquatic and riparian habitats and communities, and/or recreation and aesthetic values.

### **Pesticide Use (see also Forest-wide Herbicide Use Standards)**

- 9.13 Pesticide use within MA 9 will be approved on a case-by-case basis by the Forest Supervisor, following site-specific analysis and a monitoring plan. Terrestrial vegetation control using herbicides within MA 9 may only be conducted on dams or for control of invasive and/or exotic species and will only be with an appropriately labeled formulation for both aquatic and terrestrial site use. Aquatic application of herbicide for control of invasive or nuisance aquatic vegetation/algae may occur, providing biological controls have failed, are not available, and/or other means of control are not suitable or practical.
- 9.14 Rotenone and other aquatic approved pesticides may be used for fish sampling or monitoring.

### **Minerals and Geology**

- 9.15 Quartz crystal mining operations must be designed and implemented so that no mining or mining-related activity takes place within water and riparian areas.
- 9.16 Surface impacting, mining-related activities, and operations proposed in MA 9 other than quartz crystal mining (see Standard 9.14) must be designed and implemented so that no activity is conducted within 200 feet of streams and lakes; activities are appropriately mitigated through all stages of the operation; and, where source-water supplies may be affected, are approved only in cases where the appropriate municipal water management agency or organization concurs with the proposed mining operation, including any additional needed mitigation measures. The Forest Supervisor has final approval authority for all minerals operations in MA 9.
- 9.17 Removal of gravel and/or building/landscaping stone is not allowed within MA 9.
- 9.18 The design and operation of oil and gas drilling operations will include stipulations that activities not take place within 200 feet of MA 9 streams and lakes and that appropriate mitigation measures are applied through all stages of activity. All drilling fluids and muds must be disposed of in state-approved sites off National Forest lands.

### **Timber Harvest Administration**

- 9.19 Prevent debris from entering streams during timber harvesting. If any debris enters streams, it will be removed within 48 hours unless otherwise agreed upon by the Forest Service.
- 9.20 Culverts, bridges, or reinforced crossings may be required on temporary roads at all points where it is necessary to cross protected stream courses. Ford crossings may be permitted with written authorization in locations containing exposed bedrock or rock-fragment bottoms, or where streams can be protected with clean rock aggregate or other suitable treatment measures. In no case will temporary culverts involving the placement of fill material in stream courses be allowed on streams identified as important for fisheries unless the forest or state fisheries biologist determines washed rock fill may be used.

## **Transportation**

- 9.21 Do not locate roads and trails within or immediately adjacent to SMAs unless alternative routes have been reviewed and rejected as more environmentally damaging or if such location would clearly not be in the best public interest.
- 9.22 Where road location in riparian areas is necessary, design roads and crossings to minimize impacts on streams and associated aquatic habitats in order to protect the natural and beneficial values of these areas. Stabilize roads and fills at road crossings and culverts by utilizing rip-rap, plantings, mats, etc. Create sediment traps by installing barriers, fences, etc. when required for soil stability or sediment control.
- 9.23 All new stream crossings will be constructed so that aquatic organism passage is not impaired and so that the natural flow regime is not significantly altered. Reconstruction of all stream crossings will consider aquatic organism passage and incorporate structures to aid such passage, where practical.

## **Prescribed Fire**

- 9.24 Minimize firelines for prescribed burns within Streamside Management Areas. Where there is no practical alternative, construct firelines that cross streams at designated points according to the following design criteria:
- Cross streams and associated SMAs at right angles (or as close to right angles as possible)
  - Follow temporary road/skid trail standard for slope restrictions
  - Use hand tools and/or back blade firelines away from streams
  - Ensure bank integrity
  - Construct firelines at minimum effective widths; width should not exceed 10 feet
  - Place waterbars at the edge of the SMA and at appropriate intervals (use Table 3.1 guidelines or shorter intervals) along the fireline as it crosses the SMA
  - Do not create entrenched firelines (those with prominent berms or banks)
  - Rehabilitate any existing, entrenched firelines by pulling the berms back into the fireline to restore grade and eliminate water channeling effects

## **Recreation**

- 9.25 Manage recreational activities to ensure shoreline stability and protection of water quality. Ensure 90 percent of shoreline is well-vegetated or otherwise stabilized.

## **Timber**

- 9.26 Logging equipment will be kept out of perennial and other stream channels with defined channels except on approved, designated crossings. Crossings will be at right angles to the stream or riparian area.
- 9.27 For proposed vegetation management treatments within designated public water source areas as shown in Appendix xx, the source water manager/operator will be notified during the scoping process and prior to project implementation.

## Species Considered and Evaluated, and Key Findings

**Terrestrial and Aquatic Federally Endangered and Threatened Species and Critical Habitat Considered (Table 4):** There are five federally Endangered and two federally Threatened terrestrial species listed as occurring or potentially occurring within the Forest. At present, there are no species known to occur on the Forest that are proposed for federal listing. The terrestrial species include four birds, one mammal, one insect, and one reptile. There are four federally Endangered and two federally Threatened aquatic species—four mussel, one aquatic plant, and one fish species—listed as occurring or potentially occurring within the Forest. There is also designated Critical Habitat (two river reaches) within the Forest for the federally Threatened leopard darter.

**Table 4. Status and Determinations of Effects to Ouachita National Forest Federally Threatened (T) or Endangered (E) Species**

Common Name (Scientific Name)	Status	Comments	Determination
Least tern ( <i>Sterna antillarum</i> )	E	No known occurrences or potential habitat on Forest	No effect
Piping plover ( <i>Charadrius melodus</i> )	E	No known occurrences or potential habitat on Forest	No effect
Indiana bat ( <i>Myotis sodalis</i> )	E	Only known as an occasional winter visitor to protected Bear Den Caves	Not likely to adversely affect (discountable)
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	T	Winter visitor and occasionally nests	Not likely to adversely affect (discountable)
American burying beetle ( <i>Nicrophorus americanus</i> )	E	American Burying Beetle Area (ABBA) Historical ABB Counties of OK—McCurtain & LeFlore; and AR—Scott, Logan & Sebastian	Likely to adversely affect
		All other AR Counties with NF ownership outside of the ABBA	No effect
Red-cockaded Woodpecker ( <i>Picoides borealis</i> )	E	Populations are limited to the restored Shortleaf Pine-Bluestem Ecosystem on the Ouachita NF (MA 22)	Not likely to adversely affect (discountable)
American alligator ( <i>Alligator mississippiensis</i> )	TS*	No known resident or reproducing populations; occasional sightings in Red Slough & Broken Bow Lake	No effect

Common Name (Scientific Name)	Status	Comments	Determination
Winged mapleleaf mussel ( <i>Quadrula fragosa</i> )	E	No known occurrences on Forest	No effect
Ouachita rock-pocketbook ( <i>Arkansia wheeleri</i> )	E	Not found to occur within the Ouachita NF, but within close proximity	Not likely to adversely affect (discountable)
Scaleshell mussel ( <i>Leptodea leptodon</i> )	E	Only one known occurrence on the Ouachita NF; poorly known, difficult to detect, extremely rare	Not likely to adversely affect (discountable)
Pink Mucket ( <i>Lampsilis abrupta</i> )	E	No known occurrences on Forest	No effect
Arkansas fatmucket mussel ( <i>Lampsilis powellii</i> )	T	Ouachita River drainage endemic; main populations are in the Forks of the Saline, S. Fork Ouachita and upper Ouachita rivers	Not likely to adversely affect (discountable)
Harperella ( <i>Ptilimnium nodosum</i> )	E	Populations on the Ouachita limited to stream/river channels	Not likely to adversely affect (discountable)
Leopard darter ( <i>Percina pantherina</i> )	T	Endemic to the Little River system in AR/OK; critical habitat designated on Ouachita NF	Not likely to adversely affect (discountable)
Leopard darter Critical Habitat	CH	Designated reaches of the Glover River and upper Mountain Fork	Not likely to adversely modify Critical Habitat (discountable)

\*Threatened by similarity of appearance to other listed crocodylians.

## Environmental Baseline and Potential Effects for the Terrestrial Species Evaluated in this Biological Assessment

### Least tern (*Sterna antillarum*) and Piping plover (*Charadrius melodus*)

#### *Environmental Baseline*

Most least terns and piping plovers that occur on the Ouachita NF in Arkansas and Oklahoma are passing migrants. Some regularly forage within the Red Slough Wildlife Management Area. From May through September, a few nest in small colonies on exposed sandbars in the Arkansas, Mississippi, White, and Red Rivers outside of the Ouachita NF. Large river nesting habitat is threatened by manipulation of river flows. Reduced flows allow encroachment of woody vegetation, eliminating some bare sandbars. High flows during nesting wash away eggs and drown chicks. Nests are also lost to dredging operations, trampling by cattle, all-terrain vehicle use, storms and predation.

### *Determination of Direct, Indirect, and Cumulative Effects*

The least tern and piping plover nest on sandbars of large rivers and may seasonally occur as migrants, but are not known to occur as reproducing populations on the Ouachita NF (James and Neal, 1986; Peterson, 1980). There is no known or potential large river sandbar habitat on the Ouachita NF; therefore, there should be no direct, indirect or cumulative effects from Ouachita NF management activities on these species. There are no known element occurrences on the Ouachita NF; therefore, a determination of "no effect" is made for the least tern and piping plover.

### **Indiana bat (*Myotis sodalis*)**

#### *Environmental Baseline*

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 surveys during the 2003 Ouachita Mountain Bat Blitz, have failed to locate this species in the Arkansas portion of the Ouachita NF or adjacent lands.

The Indiana bat's life history and habitat requirements, for both the active portion of the year and during hibernation, are well known and succinctly summarized by Menzel et al. (2001). Mist net surveys and examination of abandoned mines for bat species forest-wide and on nearby lands have been extensive (Heath et al. 1986; Steward et al. 1986; Saugey et al. 1989; Saugey et al. 1993; Nelson et al. 1991; Baker 2000; Reed 2004). None of these investigations resulted in the capture of a single Indiana bat.

Indiana bats were discovered hibernating in Bear Den Caves in eastern Oklahoma (Saugey et al. 1990). More recent investigations of the forest's bat fauna include a long-term study on the Winona portion of the district in Phase III research areas being conducted by a Southern Research Station work unit based at Stephen F. Austin University in Nacogdoches, Texas. Another study conducted during the summers of 2000/2001 by Henderson State University captured bats using ridge-top ponds and road ruts, specifically targeting detection of the Indiana bat. Neither of these studies resulted in the capture of Indiana bats (Perry and Thill 2001; Tumilson 2001).

The U.S. Forest Service, Arkansas Game and Fish Commission, and the Southeastern Bat Diversity Network sponsored a "Bat Blitz" on the Ouachita NF in Montgomery County, Arkansas on 4-7 Aug 2003. Volunteer biologists from state and federal agencies, universities, and private companies from nine states participated in this event to learn as much as possible about the bat fauna of the area while sharing techniques and experiences. No Indiana bats were captured during these four nights of intensive mist netting.

From 2002-2004, Reed (2004) surveyed extensively in the Lake Greeson Project Area, just south of the Arkansas portion of the Ouachita NF and just east of the Oklahoma portion. This study was specifically targeting the southeastern *Myotis*, but every bat species captured during bridge and mine surveys or mist netting efforts was identified and noted. The surveys actually overlapped the southern Ouachita NF in Arkansas, but did not extend into Oklahoma. There were seven bat species captured during this study, but no Indiana bats were captured.

Gardner (2001) published data from the Indiana bat Recovery Team and other sources in the scientific literature that show there are no records of this species reproducing in Arkansas or Oklahoma, and that Indiana bats typically travel north from winter hibernacula (located in the Ozarks and in southeastern Oklahoma), not south into the Ouachita Mountains.

Indiana bats occasionally hibernate in small numbers (no more than ten bats) in Bear Den Caves on the Ouachita NF in eastern Oklahoma, but have not been detected there or anywhere else on the Ouachita NF during the breeding season, despite numerous bat survey efforts. Bear Den Caves represent the only natural cave habitat occurring on the Ouachita NF, and they are within the congressionally designated Winding Stairs National Recreation Area. Very little active management activities occur near the caves other than gated protection of the cave habitat under a Forest Supervisor’s Closure Order. The naturally limiting edaphic conditions of the potential foraging area surrounding Bear Den Caves maintain an open hardwood stand of old trees. This area is at high elevation where the soils are thin, the slope is steep, and soil moisture retention is low.

*Determination of Direct, Indirect, and Cumulative Effects*

The influence of Ouachita NF management activities on Indiana bat is summarized here. Refer to Table 3 from more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (see Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire		X			
Timber Harvest & Regeneration Activities	X				
Forest Regeneration Site Preparation	X				
Herbicide	X				
Construction, Reconstruction, Maintenance	X				
Other Ground-Disturbing Activities	X				
Decommissioning and Rehabilitating	X				

Direct effects to the Indiana bat could include disturbance and/or habitat degradation from human intrusions at Bear Den Caves, the only suitable hibernation site known to occur on the Ouachita NF. Because Bear Den Caves occurs in the Winding Stair Mountain National Recreation Area (MA19a), vegetation management activities are and will continue to be minimal; however, prescribed fire smoke may inadvertently enter the caves. Bear Den Caves are slated for continued protection by a Forest Supervisor’s Closure Order from human disturbance; the effects on this hibernation site under all alternatives would be protection of the desired habitat. Management needed to maintain Indiana bat habitat at the cave opening and with the buffer area is not precluded.

Indirect effects in the general forest area could be enhancement or development of potential summer roost and foraging habitat. Although Indiana bats are not known to occur on the Ouachita NF during maternity periods, potential roost and foraging habitat could benefit from properly implemented prescribed burns, including improvement of foraging habitat conditions and creation of potential roosts. The flame lengths of prescribed burns are not likely to have a direct effect on potential roost trees. Indiana bats would normally be absent from the general forest area during all dormant season fires.

Management direction addresses the critical needs for habitat and protection of the Indiana bat and should improve or maintain foraging, roosting and hibernacula habitat conditions for this species at the landscape level. Additional site-specific analysis would be conducted on any projects planned for near Bear Den Caves.

Cumulative effects forest-wide, as well as at the Bear Den Caves site, would provide continued protection of the cave site. Forest-wide objectives and standards provide for retention, restoration and enhancement of hardwood and pine stands for potential summer foraging habitat.

A determination of “not likely to adversely affect” is made for the Indiana bat because:

- (1) There are no known occurrences of Indiana bats on the Ouachita NF during the summer (e.g. maternity sites).
- (2) The only known hibernaculum, Bear Den Caves, is gated to protect the caves from human intrusions.
- (3) Bear Den Caves occur in the Winding Stair Mountain National Recreation Area (MA 19a), where naturally limiting factors maintain an open hardwood stand that is optimal for bat flight, foraging and roosting habitat, and where few to no other FS management activities occur.
- (4) Proposed vegetation management activities, including hardwood retention, restoration and enhancement, and snag/den tree provision and retention, will continue to provide suitable potential summer foraging, and roosting habitat for bat species, including the Indiana bat, at the landscape level.
- (5) Proposed conservation measures will continue to provide for riparian area management and maintain or improve stability, function, and water quality of streams, ponds, and lakes. Stable or improved water quality would be beneficial in maintaining an aquatic prey base for bats.
- (6) Other potential subterranean bat habitat will continue to be protected by the following standard.

Mine and Cave Habitat

TE002 Proposed mining operations affecting abandoned mine adits and shafts or natural dens and caves that could be considered suitable habitat for federally Threatened and Endangered species or Southern Region Sensitive species must include conservation measures to protect the species and habitat.

(7) The FS will continue to consult on those projects that are proposed to occur within the management buffers for Bear Den Caves as per the following standards.

Indiana Bat Habitat (Bear Den Cave)

TE006 Maintain the cave gate to protect hibernating bats. The known hibernaculum and any other hibernacula that may be discovered will be protected by maintaining a buffer having a radius of 2 miles. Within this buffer, proposed ground-disturbing management projects and prescribed burning will be evaluated to determine their direct, indirect, and cumulative effects on Indiana bats and the hibernaculum.

TE007 When planning and conducting prescribed burns inside or near the Bear Den Cave buffer, avoid inundating the cave with smoke.

**Bald Eagle (*Haliaeetus leucocephalus*)**

*Environmental Baseline*

The bald eagle is a fairly common local migrant and winter resident around lakes and large rivers in Arkansas. Numbers have grown since the bald eagle was listed as Endangered, and the Federal listing has now been changed to Threatened. Eagles often perch on exposed limbs of tall trees near water (James and Neal 1986; USDI FWS 1983). They feed on fish, water birds, small mammals and carrion. The breeding territory for most of the local population is in the northern United States and Canada. Bald eagles are known to regularly use three bald eagle nests around Lake Ouachita on the Womble and Jessieville Ranger Districts (RD) and on the Poteau RD, where bald eagles have nested since 2000 near Lake Hinkle. Bald eagles utilize large trees near water as nest sites, as well as roosting sites in winter.

*Determination of Direct, Indirect, and Cumulative Effects*

The influence of Ouachita NF management activities on the Bald eagle is summarized here. Refer to Table 3 from more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (See Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire		X			
Timber Harvest & Regeneration Activities		X			
Forest Regeneration Site Preparation		X			

Potential Forest Management Activities (See Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Herbicide		X			
Construction, Reconstruction, Maintenance		X			
Other Ground-Disturbing Activities		X			
Decommissioning and Rehabilitating		X			

Direct effects to bald eagles, in the form of fatalities to individual birds from forest management activities, are not likely to occur through normal, management actions and activities occurring on the Ouachita NF due to their ability to move away from disruptive activities during the winter, and to USFWS/Forest Plan direction for nest protection measures.

Indirect effects to bald eagles and their habitat could occur. Negative indirect effects include disturbance that would result in breeding or nesting failure, and alteration of occupied habitats. Vegetation management activities including timber harvesting and/or road building activities have the potential to impact the bald eagle or its habitat, should it occur near streams, lakes, or other wetlands. Human disturbance from roads, trails, and campgrounds can also adversely affect the use of an area for nesting or roosting by eagles.

Beneficial indirect effects to habitat would result through the continued protective emphasis in Streamside Management Areas (SMAs). The primary threat to the bald eagle on the Ouachita NF is habitat degradation from loss of large trees near water. The SMAs of streams, rivers and lakes are unsuitable for timber production under the preferred alternative. Management activities within these SMAs are limited primarily to forest health and ecological restoration needs; therefore large trees near water are likely to benefit under all alternatives.

The revised Forest Plan uses recovery plan direction for establishing protection zones around bald eagle nests and communal roost sites. Management Area 9 (Water and Riparian Communities) emphasizes low levels of disturbance and maintenance of mature forest. Thus, the cumulative effects on bald eagle habitat would be beneficial maintenance or enhancement of the desired habitat.

The cumulative effects of management direction address critical needs for habitat and protection of roosts and nests from human disturbance. The proposed Forest Plan is not likely to adversely affect the bald eagle, and should provide for habitat conditions beneficial to this species.

A determination of “not likely to adversely affect” is made for the bald eagle because:

- (1) Proposed vegetation management activities will continue to provide suitable perching, roosting, and nesting habitat for bald eagles.

(2) Watershed and riparian area management and Forest Plan standards will maintain or improve stability, function, and water quality of streams, ponds, and lakes. Stable or improved water quality would be beneficial in maintaining an aquatic forage base for eagles.

(3) Although recreation use is expected to increase slightly, Forest Plan direction and implementation and enforcement of habitat and nest protection guidelines will contribute to minimizing disturbance to bald eagles on the Ouachita NF.

#### Bald Eagle Habitat

TE004 Protection areas will be delineated and maintained around all bald eagle nests and communal roost sites. Restrictions on certain activities during critical periods for nesting will be as specified in the current guidelines for bald eagle habitat management from the US Fish and Wildlife Service, unless exempted or modified by that agency.

### **American burying beetle (*Nicrophorus americanus*)**

#### *Environmental Baseline*

The American burying beetle (ABB) is a large, black-and-orange carrion beetle once found in 32 states and Canada but now known only in Arkansas, Oklahoma, Nebraska, and Rhode Island. Specimens have been documented in nine Arkansas counties, with the largest numbers in Fort Chaffee and on the Ouachita NF. Surveys have been conducted for the American burying beetle (ABB) across the Ouachita NF, but more intensively in Ranger Districts (RDs) and counties having known occurrences—the Poteau and Cold Springs RDs in Arkansas and the Tiak, Choctaw and Kiamichi RDs in Oklahoma. In Oklahoma, ABBs have been documented on the Ouachita NF in LeFlore and McCurtain Counties. American burying beetles are known to utilize the grass/forb/shrub seral stages of pine-oak or oak-pine dominated open and closed canopy forests, mesic hardwood forests, dry-mesic oak forests and dry oak woodland habitat on the Ouachita NF (USDI FWS 1994; Carlton and Rothwein 1998).

Reasons for the decline of this species are not well understood, but habitat fragmentation and pesticides are possible contributing factors. This insect feeds primarily on carrion from bodies of small vertebrates that it buries and later uses for food for hatching larvae. Like other carrion beetles, burying beetles play an important role in ecosystems, serving as scavengers responsible for recycling dead or decaying materials. Predators and scavengers such as American crow, raccoon, fox, opossum and skunk compete with ABB for carrion. Competition for carrion within the genus *Nicrophorus* and within the species *N. americanus* is documented. There are no known incidences of mammalian or bird predation on the beetles.

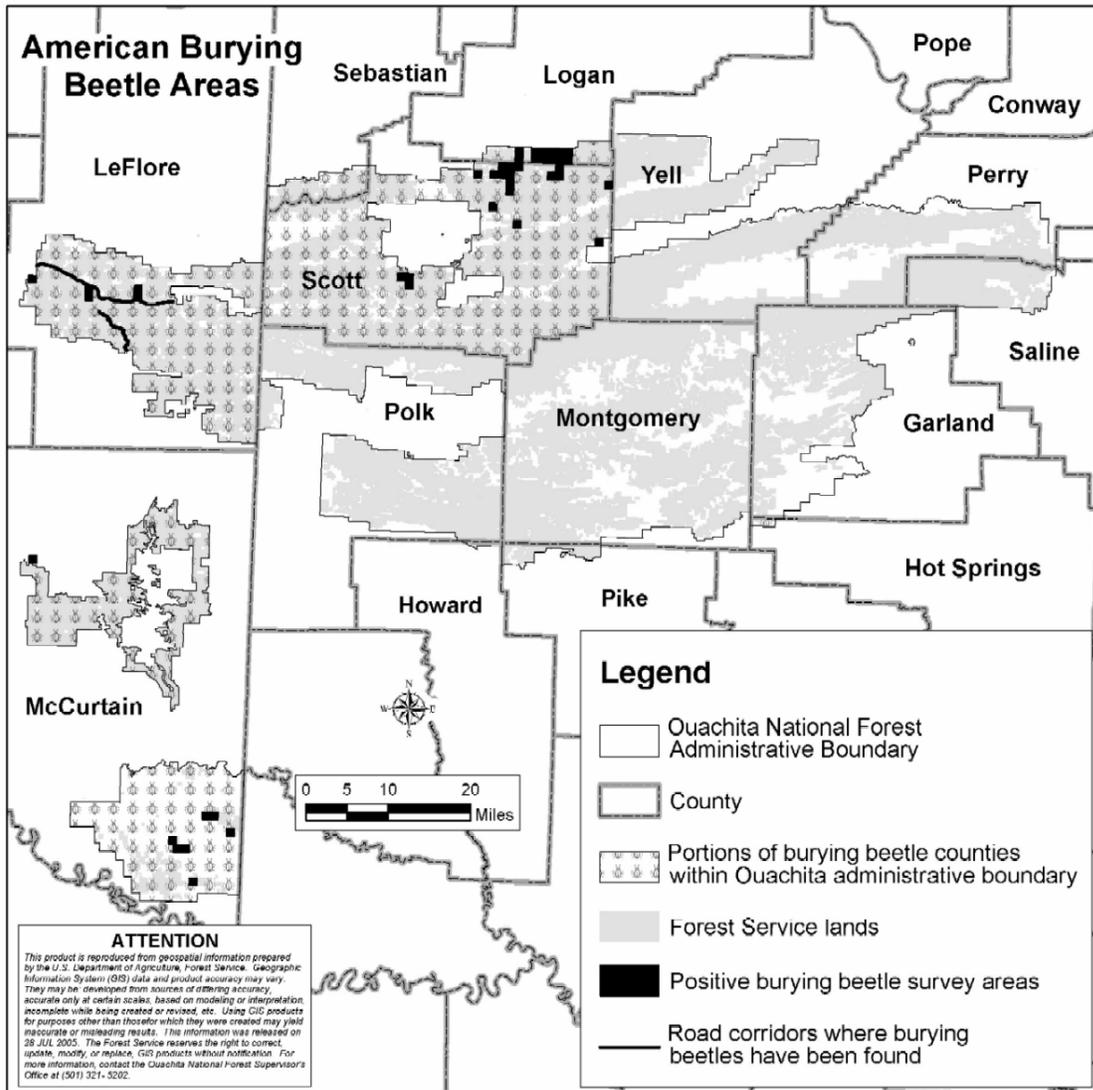
The ABB's rangewide decline has been attributed to a variety of factors, including decreasing populations of the small mammals and birds necessary for successful rearing of its larvae, and competition with vertebrate scavengers for small carrion. Contrary to the earlier belief that the ABBs were associated with eastern deciduous woodlands, it is now apparent that carrion availability (appropriate in size as well as

numbers) is more important than the type of vegetation or soil structure (Lomolino and Creighton 1995).

*Determination of Direct, Indirect, and Cumulative Effects*

Since 1992, the Ouachita NF has conducted numerous and comprehensive surveys on NF lands for the American burying beetle, in accordance with USFWS protocol. These surveys have confirmed continued existence of occurrence in the known historic counties of Arkansas (Scott, Logan, Sebastian), as well as Oklahoma (LeFlore and McCurtain). However, ABB have not been found to occur in any other counties within the Ouachita NF, even after well over 12,000 trap night surveys (Jerry Davis, personal communication, 28 July 05).

The counties of confirmed historical and existing ABB occurrence as previously listed, are designated as the American Burying Beetle Area (ABBA) and are evaluated separately from the rest of the Ouachita NF. Any given NF project will then either be within the ABBA or outside of the ABBA.



As there are no known occurrences of American burying beetles outside of the ABBA in those counties with NF lands, the proposal will have no effect in these areas. Periodic surveys will continue to be conducted on the NF lands outside of the ABBA, in accordance with US Fish and Wildlife Service monitoring protocols. If any American burying beetles are found to occur outside of the historic counties, then that county will be added to the American Burying Beetle Area, and management activities will be planned and implemented in accordance with the most current Forest Plan and USFWS direction.

The influence of Ouachita NF management activities on American burying beetle within the ABBA is summarized here. Refer to Table 3 from more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire		X			
Timber Harvest & Regeneration Activities					X
Forest Regeneration Site Preparation					X
Herbicide Use	X				
Construction, Reconstruction, Maintenance					X
Other Ground-Disturbing Activities					X
Decommissioning and Rehabilitating					X

Direct effects include ground disturbing activities that may result in harm to ABB individuals, as buried carrion is the substrate of choice for depositing their eggs. Ground disturbing activities that could potentially harm ABB individuals include some forest regeneration site preparation activities, and construction, reconstruction, maintenance or decommissioning roads, firelines, trails and facilities. Direct effects to individual ABBs would be reduced or minimized due to adherence to the US Fish and Wildlife Service baiting-away protocol from project areas prior to implementation of “ground-disturbing” management activities.

Generally, the indirect effects of forest management activities will be beneficial to American burying beetle habitat in the preferred alternative. Increased establishment and maintenance of early seral habitat will provide enhanced habitat for the ABB prey base of small vertebrate carrion production. Indirect beneficial effects on ABB habitat would primarily involve maintenance and/or enhancement of the grass/forb/shrub vegetation condition that harbors small mammal and other potential carrion populations. The cumulative effects of forest management activities in the preferred alternative on ABB habitat would be continued enhancement of grass/forb habitat, providing conditions beneficial to this species, but ground-disturbing activities may harm individuals.

A determination of “likely to adversely affect” is made for the American burying beetle within the Ouachita NF American Burying Beetle Area because: ground disturbing activities may harm individuals and, even if Baiting Away and Trapping and Relocating are implemented, not all ABBs would be removed.

The FS will continue to coordinate with the USFWS on those projects that are proposed to occur within the American Burying Beetle Area, as well as conduct mitigation to minimize harmful effects as per the following standard.

#### American Burying Beetle Habitat

TE005 Potential project level impacts on individual American Burying Beetles (ABBs) will be reduced by using the U.S. Fish and Wildlife Service's (USFWS) current bait-away or trap-and-relocate protocols.

In the event that the Forest Service is unable to follow these protocols, the Forest will informally consult with the USFWS. Finally, the Forest Service will implement a monitoring plan for ABBs within the counties of known occurrence.

#### **Red-cockaded Woodpecker (*Picoides borealis*)**

##### *Environmental Baseline*

In the mid-1800s, John J. Audubon described the Red-cockaded Woodpecker (RCW) as abundant in Southern pine forests. Today, 10,000 to 14,000 individuals remain, living in a fragmented range in the southeastern United States. Unlike other woodpeckers, the RCW roosts in cavities in live pines requiring 80 to 120-year-old pines for its cavities, and extensive pine and pine-hardwood forests to meet its foraging needs. Much of the Southeast has been cleared for agriculture. Many remaining pine forests are unsuitable for the RCW. Because of the drastic loss and continued decline of habitat rangewide, the bird is federally classified as Endangered (NatureServe 2000). Basic biological and population data about RCWs have appeared in many technical publications.

Historically, RCWs occurred in pine forests of numerous species, ranging in the eastern United States from New Jersey south through Florida, and west from Missouri through Oklahoma and Texas. By the time RCWs were listed as Endangered, suitable habitat had shrunk to 1 percent or less of its historic levels, with predictable declines in the numbers of birds. Surveys in Arkansas in the 1970s and 1980s revealed a population of at most a few hundred birds confined to public lands and scattered holdings of timber companies (James and Neal 1986).

Management Area 22 includes areas restored or being restored to shortleaf pine-bluestem grass communities in the Ouachita Mountains of Arkansas and Oklahoma. Currently, the only active RCW clusters on the Ouachita NF are limited to restored shortleaf pine-bluestem communities within Management Area 22 in Arkansas (USDI 2000). There are also three active RCW clusters on the Crossett Experimental Forest in Crossett, Arkansas, that are considered stable. Within MA 22 in Arkansas, there has been a steady increase in the number of active RCW clusters, from 10 to 35 clusters from 1990 to 2004.

##### *Determination of Direct, Indirect, and Cumulative Effects*

The influence of Ouachita NF management activities on Red-cockaded Woodpecker is summarized here. Refer to Table 3 from more information about each "Potential Forest Management Activity" category.

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire				X	
Timber Harvest & Regeneration Activities				X	
Forest Regeneration Site Preparation				X	
Herbicide	X				
Construction, Reconstruction, Maintenance		X			
Other Ground-Disturbing Activities		X			
Decommissioning and Rehabilitating	X				

Direct effects to RCWs could include disturbance of individuals related to forest management activities, such as timber harvest, road or fireline construction, or prescribed fire. However, for the period of 1998-2002, all RCW habitats managed with prescribed fire included 6,195 active clusters with no loss of nests. The Revised Recovery Plan increases the protection standard (area raked around each roost tree) above those used during the compilation of the data cited above. Therefore, the potential for direct effects to RCWs during nesting season due to prescribed fire is insignificant and discountable, with standard mitigations given in the Recovery Plan. Avoidance of prescribed burning during the nesting season is not recommended, since nesting season coincides with timing favorable for other important ecological fire effects.

Indirect effects to RCWs occur at the landscape level and at the population level. There will be beneficial effects of the habitat management actions to RCW habitats and populations. Detrimental habitat isolation and fragmentation effects will be reduced as suitable habitat areas are enlarged and joined across the Habitat Management Areas. Population expansion will be fostered by: restoration of off-site pine stands with native pine species; regeneration of limited mature pine stands with retention of potential roost trees; thinning of mid-successional and mature pine and pine-hardwood stands; prescribed burning to remove encroaching woody vegetation and restore herbaceous groundcovers; chemical and mechanical treatment of encroaching midstory where fire is not a viable management tool; installation of artificial roosting and nesting cavities; protection of artificial and natural cavities from competitors through the installation of excluder devices; capture, banding and monitoring of individual birds to facilitate monitoring of the population; and translocation of birds as necessary to optimize annual reproduction.

Cumulative effects to RCW populations over the long-term are expected to be population growth at rates prescribed in the Revised Recovery Plan, Recovery Plan population objective attainment, and ultimately, recovery of the species. Management direction for RCW populations on the Ouachita NF in Arkansas and Oklahoma will be according to the RCW EIS Record of Decision and the Revised Recovery Plan as required by the Endangered Species Act. Habitat Management Areas for RCWs have been established

through Forest Plan amendments following direction in the EIS Record of Decision and Revised Recovery Plan for RCWs. Management direction for RCWs has been incorporated in the Revised Forest Plan through the continued allocation of acres to Management Area 22, with its accompanying detailed standards.

Beneficial management actions required to implement the RCW direction include: the harvesting of timber, including thinning and regeneration; the use of mechanical, chemical and prescribed burning for control of midstory and hardwood encroachment; the installation of artificial roosting and nesting cavities; the protection of artificial and natural cavities from competitors through the installation of excluder devices; the capture, banding and monitoring of individual birds; the translocation of birds from donor populations to recipient populations; and intra-population translocations, as necessary to optimize annual reproduction.

Mitigation actions required under the RCW direction for habitat management include: protection of active and inactive cavity trees within burn units; utilization of two-aged regeneration method rather than clear-cutting; rotation ages not less than 120 years for shortleaf pine; limitation of regeneration area size; and limitation of operable season to avoid nesting and brood-rearing periods in active clusters. Implementation of the Revised Land and Resource Management Plan for the Ouachita National Forest is not likely to adversely affect the RCW, as residual potential risks to individuals after full implementation of protective measures are insignificant and discountable.

There are two reasons why a determination of “not likely to adversely affect” is made for the Red-cockaded Woodpecker:

First, in addition to following the mitigation actions required under the Revised Red-cockaded Woodpecker Recovery Plan, the following standards have been developed for the Ouachita NF pine-bluestem restoration efforts to treat RCW habitat in MA 22.

### **Cavity Tree Clusters**

22.01 An active RCW cavity tree cluster is defined as the minimum convex polygon containing all cavity trees in use by a group of RCWs plus at least a 200-foot wide buffer of continuous forest; each minimum convex polygon plus its buffer is at least 10 acres in size. Active RCW clusters, recruitment stands, and recruitment clusters are all unsuitable for timber production. Active RCW clusters will be protected from disturbance by thinning, tree skidding, or midstory reduction treatments during nesting, which occurs on the Ouachita National Forest from approximately April 1 to July 1. These general dates will be used unless there is more specific nesting season information for the group involved. All trees within a cluster that has cavities actively used or suitable for use by RCWs will be protected insofar as possible from damage.

22.02 Replacement stands will be designated and managed for each active RCW cavity tree cluster and its associated potential breeding group as future nesting habitat. The selection criteria for these replacement stands include stands that: 1) are at least 10 acres in size; 2) are suitable for nesting, considering stand age, forest type and availability of relicts; considering stand age, forest type and availability of relicts; 3) are adjacent to or within one-half mile of the active cluster; and 4) are 20 to 30 years younger than the cavity tree cluster to be replaced. Replacement stands are not required to have additional designated

foraging acres. Inactive RCW clusters may be designated as replacement stands.

- 22.03 Recruitment clusters will be established at the rate of at least 10 percent of the total number of active clusters in the ONF population. These recruitment clusters will be provisioned with serviceable cavities. Inactive or abandoned cavity tree clusters may be designated as recruitment clusters.
- 22.04 Recruitment stands will be designated within  $\frac{1}{4}$  to  $\frac{1}{2}$  mile from an active cluster, recruitment cluster or other recruitment stand when the RCW population is below the population objective. These stands will occur at a rate determined by subtracting the sum of the number of active clusters and recruitment clusters from the population objective (400 clusters in Arkansas, 50 in Oklahoma). Recruitment stands would be designated but would not have to be provisioned with serviceable cavities. Recruitment stands would otherwise have to meet nesting habitat requirements, including adequate associated foraging habitat.
- 22.05 Consistent with Management Area 9 direction, vegetation management treatments (e.g., basal area reduction, midstory reduction) may be performed within streamside management areas to the extent that nesting habitat in the vicinity of cavity trees needs to be improved. The intent of this standard is NOT to treat all streamside areas, only those of critical value as RCW nesting habitat.

### **Foraging Habitat**

- 22.06 MA 22 will be managed to provide “good quality foraging habitat,” as defined in the Revised Recovery Plan for the Red-cockaded Woodpecker (see Appendix E of this document).
- 22.07 For RCW clusters on National Forest (NF) land in which the one-half mile foraging zone overlaps with non-NF land, 100 percent of the foraging habitat will be provided on NF land unless there is an agreement with the landowner(s) (which may include state government agencies).

### **Livestock Grazing**

- 22.08 Livestock grazing may utilize up to 25 percent of the annual forage growth, but will not exceed this amount.

### **Silviculture**

- 22.09 For any planned timber harvest, the following priorities will be used to select pine trees for retention:
- 1) Relict trees
  - 2) Potential cavity trees
  - 3) Trees 9.6 inches and greater dbh
  - 4) Trees less than 9.6 inches dbh

- 22.10 To minimize fragmentation of RCW habitat, no more than 20 percent of the area within one-fourth mile radius of an active RCW cluster(45 of 220 acres), including non-NF land, can be less than 30 years old. If the acreage of undesirable RCW habitat condition exceeds 20 percent, regeneration must be deferred.
- 22.11 Within RCW management areas (HMAs), a modified shelterwood or modified seedtree method of harvest will be used to regenerate native shortleaf pine, retaining from 10 to 30 square feet of residual pine basal area. Stands selected for such regeneration harvests will not exceed 25 acres in MA22a or 40 acres in MA22b.
- 22.12 Within RCW HMAs and consistent with Forest-wide direction, clearcutting may be used to remove off-site loblolly pine and regenerate shortleaf pine-dominated forests. Clearcut restoration areas will not exceed 40 acres if they occur within one mile of an active RCW cavity tree cluster, or 80 acres otherwise.
- 22.13 Conduct modified even-aged regeneration cutting in at least 4 percent and no more than 8.3 percent of the suitable pine forest acreage within project areas per 10-year entry cycle. The goal of this standard is to insure long-term perpetuation of suitable habitat.
- 22.14 Regeneration will not occur in the oldest one-third of the age classes unless they contain more acres than needed for a balanced age-class distribution or they exceed the rotation age of 120 years.
- 22.15 Active RCW clusters, replacement stands, recruitment stands, and recruitment clusters are unsuitable for timber production.
- 22.16 Thin stands to increase their suitability as RCW habitat, to reduce SPB risk, and to promote other species or attributes associated with open understories.
- 22.17 In active, inactive, and recruitment clusters, retain no more than 10 square feet of basal area per acre in overstory hardwoods. Remove all hardwoods within 50 feet of cavity trees.

**[Forest Plan] Table 3.22 Even-Aged Management in MA 22**

Management Area		Maximum Size of Regeneration Area (Acres) <sup>1,2,3</sup>		Approximate Harvest Age		
		Pine, Pine-Hardwood	Hardwood, Hardwood-Pine	Pine, Pine-Hardwood	Hardwood, Hardwood-Pine	
					Site Index < 80	Site Index > 80
22	a	25	10	120	70-100	100-130
	b	80	10	120	70-100	100-130

<sup>1</sup> Maximum size of regeneration opening may be exceeded with approval from the Forest Supervisor up to a maximum of 80 acres for pine, pine/hardwood and 40 acres for hardwood and hardwood/pine.  
<sup>2</sup> Approximate regeneration harvest age will be 35 years in loblolly pine stands when completing a final harvest cut intended for plant community restoration.  
<sup>3</sup> Acreage limitations for regeneration harvest cuts do not apply within areas affected by severe natural catastrophic events nor are they applicable where acquired lands have been cut-over prior to Forest Service acquisition.

Second, the revised Forest Plan allows for incorporating areas where RCW clusters become established outside of MA 22 into the MA 22 management regime as per the following standard.

**Red-cockaded Woodpecker Outside of Management Area 22**

TE001 If Red-cockaded Woodpecker clusters become established naturally on national forest lands outside of but within five miles of the current boundaries of MA 22 (Renewal of the Shortleaf Pine-Bluestem Grass Ecosystem and Red-cockaded Woodpecker Habitat), such lands will be added to MA 22, except where a new cluster appears in wilderness or other areas that limit such management (in which case, consultation with the U.S. Fish and Wildlife Service will be initiated). See MA 22 for additional design criteria related to the Red-cockaded Woodpecker.

**Environmental Baseline and Potential Effects for the Semi-Aquatic and Aquatic Species Evaluated in this Biological Assessment**

**American alligator (*Alligator mississippiensis*)**

*Environmental Baseline*

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 crocodylians. It now seems secure from extinction and was pronounced fully recovered in 1987.

Alligators play a vital role in wetland wildlife communities. Their deep water holes are important for other wildlife, especially during drought. They help control populations of many nuisance animals and are also valuable for biomedical studies (NatureServe 2000). The only suitable or potential habitat for this species occurring on the Ouachita

NF is within the West Gulf Coastal Plain Wet Hardwood Flatwoods of the Red Slough Wildlife Management Area (WMA) of southeastern Oklahoma, where it has been seen in streams and ditches that run through the WMA (Wilson 1995; Conant and Collins 1998; Trauth et al. 2004). At least one alligator has also been observed in Broken Bow Lake in Oklahoma. There is little to no suitable habitat for this species on nearby lands, and the American alligator is not known to reproduce on the Ouachita NF.

*Determination of Direct, Indirect, and Cumulative Effects*

Because the Red Slough WMA is slated for continued and enhanced maintenance as a wildlife emphasis area under the preferred alternative, and there are no resident or breeding individuals known to occur on the Ouachita NF, there would be no direct, indirect, or cumulative effects. A determination of “no effect” is made for the American alligator.

**Winged Mapleleaf (*Quadrula fragosa*)**

*Environmental Baseline*

The winged mapleleaf freshwater mussel is not known but is believed to occur within the Ouachita National Forest in both Oklahoma and Arkansas. Chemical and organic pollution, alteration and inundation of river channels and siltation continue to have a severe negative impact on this species elsewhere in its range. Commercial harvest of shells may also be a threat. The winged mapleleaf is considered to be sensitive to pollution, siltation, habitat perturbation, and loss of glochidial host.

*Determination of Direct, Indirect, and Cumulative Effects and Findings*

Since there are no element occurrence records for this species on the Forest, it was analyzed in relation to its rangewide status and distribution. Populations were discovered approximately 50 miles downstream from the Forest in the Ouachita River and approximately 100 miles downstream in the Saline River so recently (2000-2004) that it is difficult to determine trends, but the low numbers of individuals and limited distribution indicate that the populations are in a precarious position.

Forest-wide resource management standards previously listed, particularly concerning “Soil and Water Resources” and “Management Area 9 (Water and Riparian Communities)” concerning the conservation of soil productivity, water quality and other aquatic resources, provide for the conservation of the potential winged mapleleaf aquatic habitat. Since there are no individuals known to occur on the Ouachita NF, there would be no direct, indirect, or discernable negative cumulative effects. A determination of “no effect” is made for the winged mapleleaf.

## **Ouachita Rock-Pocketbook (*Arkansia wheeleri*)**

### *Environmental Baseline*

Populations of this freshwater mussel are known to occur in the Kiamichi and Glover Rivers in Oklahoma and the Little River system in Oklahoma and Arkansas. Although it is not found within the Forest boundary, the Ouachita rock-pocketbook is known to occur within close proximity and downstream of the Forest (USDA FS 2000). The potential for occurrence on the National Forest along with the federally Endangered status of this species makes it a species of viability concern for the Forest.

The Ouachita rock-pocketbook is known to occur downstream of Forest ownership in the Kiamichi, Lower Little River, and Flat Creek 5<sup>th</sup> level watershed (HUC) streams. The streams within these watersheds are considered of moderate value to the viability of the Ouachita rock-pocketbook mussel range-wide. The Kiamichi Headwaters watershed is in very good condition with low risk of detrimental influences to species viability—Outcome 1.

As explained in more detail in the EIS, these viability determinations “incorporate elements of species distribution, abundance, and sensitivities to environmental factors; watershed condition relative to the species’ environmental sensitivities; and the national forest role in the watershed.” The viability determinations referred to in this Biological Assessment are defined as follows:

**Outcome 1.** Species occur within the watershed with minimal impairment. Likelihood of maintaining viability is high.

**Outcome 2.** Species viability is potentially at risk in the watershed; however, the extent and location of Ouachita National Forest lands with respect to the species is conducive to positively influencing the viability of the species within this watershed. Therefore, likelihood of maintaining viability is moderate.

**Outcome 3.** Species viability is potentially at risk within the watershed; however, the extent and location of Ouachita National Forest lands with respect to the species is NOT conducive to positively influencing the viability of the species within this watershed. Therefore, likelihood of maintaining viability is low.

**Outcome 4.** The species is so rare within the watershed (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the watershed at risk. The extent and location of Ouachita National Forest lands with respect to the species is conducive to positively influencing the viability of the species within this watershed. Therefore, likelihood of maintaining viability is moderate to low.

**Outcome 5.** The species is so rare within the watershed (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the watershed at risk. The extent and location of Ouachita National Forest lands with respect to the species is NOT conducive to positively influencing the viability of the species within this watershed. Therefore, likelihood of maintaining viability is low.

The Ouachita rock-pocketbook is so rare within the Lower Little River and Flat Creek watersheds (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the watershed at risk. The extent and location of Ouachita National Forest lands with respect to the species is NOT conducive to positively influencing the viability of the species within these watersheds—Outcome 5.

Table 5 displays the known occurrences of Ouachita rock-pocketbook mussel by watershed, the importance of the 5<sup>th</sup> level HUC to the species, percent National Forest System ownership within the HUC, risk to species viability from predicted sediment increase by watershed, and importance of National Forest lands.

**Table 5. Watershed Occurrences and Importance of National Forest Lands for the Ouachita Rock-Pocketbook Mussel**

Species	5th Level Hydrologic Unit/Watershed	HUC Importance to Species	Percent National Forest	Risk to Species Viability from predicted increased sediment	NFS Ownership Importance
Ouachita Rock-Pocketbook ( <i>Arkansia wheeleri</i> )	Kiamichi Headwaters	Moderate	49.83	Low	Outcome 1
	Lower Little River	Moderate	1.91	High	Outcome 5
	Flat Creek	Moderate	2.56	High	Outcome 5

*Determination of Direct, Indirect, and Cumulative Effects and Findings*

The influence of Ouachita NF management activities on Ouachita Rock-Pocketbook is summarized here. Refer to Table 3 for more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire	X				
Timber Harvest & Regeneration Activities		X			
Forest Regeneration Site Preparation		X			
Herbicide	X				
Construction, Reconstruction, Maintenance		X			
Other Ground-Disturbing Activities		X			
Decommissioning & Rehabilitating		X			

There is a slight possibility that individual mussels could be directly harmed by vehicles crossing streams. Indirect effects could include creation of barriers to passage of the fish host and/or excessive sedimentation from ground disturbing activities that might compromise the quality of the aquatic habitat. Cumulatively, sedimentation from national forest management activities is predicted to have no or discountable effects on mussel habitat due to forest-wide and management area specific standards (enumerated previously) designed to protect water quality and aquatic habitats. Over time, the cumulative effects of national forest management, including watershed, riparian area, and aquatic habitat management and restoration actions are expected to be beneficial for this species.

A determination of “not likely to adversely affect” is made for the Ouachita rock-pocketbook, because the proposed Revised Forest Plan provides for habitat conditions beneficial to this species with standards that:

- (1) restore, conserve, maintain or improve the stability and function of riparian communities
- (2) protect soil and water quality
- (3) minimize soil movement caused by management activities
- (4) maintain streambank and channel stability
- (5) maintain free-flowing waters to allow for aquatic organisms’ passage.

### **Scaleshell Mussel (*Leptodea leptodon*)**

#### *Environmental Baseline*

The scaleshell mussel is poorly known, difficult to detect, and extremely rare. It is known to have occurred within the Forest, but distribution and densities are not well understood (USDA FS 2000). The scaleshell mussel is found with increasing difficulty and so rarely that the individuals do not appear to be members of viable populations (no evidence of recent reproduction).

The scaleshell mussel was historically found to occur in the South Fork Fourche and Beech 5<sup>th</sup> level watershed (HUC) streams. These streams are considered of moderate value to the viability of the scaleshell mussel range-wide. The species is so rare within the South Fork Fourche watershed (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the watershed at risk. The extent and location of Ouachita National Forest lands with respect to the species is conducive to positively influencing the viability of the species within this watershed—Outcome 4. (See Ouachita rock-pocketbook section for definitions of Outcomes.)

The species is so rare within the Beech watershed (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the watershed at risk. The extent and location of

Ouachita National Forest lands with respect to the species is NOT conducive to positively influencing the viability of the species within this watershed—Outcome 3.

Table 6 displays the known occurrences of scaleshell mussel by watershed, the importance of the 5<sup>th</sup> level HUC to the species, percent National Forest System ownership within the HUC, risk to species viability from predicted sediment increase by watershed, and importance of National Forest lands.

**Table 6. Watershed Occurrences and Importance of National Forest Lands for the Scaleshell Mussel**

Species Name	5th Level Hydrologic Unit/Watershed	HUC Importance to Species	Percent National Forest	Risk to Species Viability from predicted increased sediment	NFS Ownership Importance
Scaleshell ( <i>Leptodea leptodon</i> )	South Fork Fourche	Moderate	54.26	Moderate	Outcome 4
	Beech	Moderate	15.31	Moderate-High	Outcome 3

*Determination of Direct, Indirect, and Cumulative Effects and Findings*

The influence of Ouachita NF management activities on the Scaleshell Mussel is summarized here. Refer to Table 3 for more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire	X				
Timber Harvest & Regeneration Activities		X			
Forest Regeneration Site Preparation		X			
Herbicide	X				
Construction, Reconstruction, Maintenance		X			
Other Ground-Disturbing Activities		X			
Decommissioning and Rehabilitating		X			

There is a slight possibility that individual mussels could be directly harmed by vehicles crossing streams. Indirect effects could include creation of barriers to passage of the fish host and/or excessive sedimentation from ground disturbing activities that might compromise the quality of the aquatic habitat. Cumulatively, sedimentation from national forest management activities is predicted to have no or discountable effects on mussel habitat due to forest-wide and management area specific standards (enumerated

previously) designed to protect water quality and aquatic habitats. Over time, the cumulative effects of national forest management, including watershed, riparian area, and aquatic habitat management and restoration actions are expected to be beneficial for this species.

A determination of “not likely to adversely affect” is made for the scaleshell mussel, because the proposed Revised Forest Plan provides for habitat conditions beneficial to this species with standards that:

- (1) restore, conserve, maintain or improve the stability and function of riparian communities
- (2) protect soil and water quality
- (3) minimize soil movement caused by management activities
- (4) maintain streambank and channel stability
- (5) maintain free-flowing waters to allow for aquatic organisms’ passage.

### **Pink Mucket (*Lampsilis abrupta*)**

#### *Environmental Baseline*

The federally endangered pink mucket mussel was historically known from 25 rivers and tributaries; in 1990, it was known from only 16 rivers and tributaries. This species has never been collected in large numbers from any one site or drainage, and most surveys only find one to five individuals. There are taxonomic concerns that Louisiana, Arkansas, and Missouri populations may represent another undescribed species. If populations west of the Mississippi River prove to be a different species, the rank will need to be reevaluated (NatureServe 2000).

Records indicate occurrences in the upper Ouachita watershed below Rempel Dam, which is the third major impoundment on the Ouachita River downstream from the Forest. The species is very rare in Arkansas, and while it is likely that the species historically tended to occur in low numbers, the lack of recruitment and the difficulty with which it is found indicate that the species continues to decline in the state (USDA FS 2000).

The pink mucket has rarely been found to occur in the Poteau Headwaters and Flat Creek 5<sup>th</sup> level watershed (HUC) streams. These streams are considered of high value to the viability of this mussel on the Forest, but of moderate-to-low viability value range-wide.

The species is so rare within the Poteau Headwaters watershed (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the watershed at risk. The extent and location of Ouachita National Forest lands with respect to the species is conducive to positively influencing the viability of the species within this watershed—Outcome 4. (See Ouachita rock-pocketbook section for definitions of Outcomes.)

The species is so rare within the Flat Creek watershed (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the watershed at risk. The extent and location of Ouachita National Forest lands with respect to the species is NOT conducive to positively influencing the viability of the species within this watershed—Outcome 5.

Table 7 displays the known occurrences of pink mucket mussel by watershed, the importance of the 5<sup>th</sup> level HUC to the species, percent National Forest System ownership within the HUC, risk to species viability from predicted sediment increase by watershed, and importance of National Forest lands.

**Table 7. Watershed Occurrences and Importance of National Forest Lands for the Pink Mucket Mussel**

Species Name	5th Level Hydrologic Unit/Watershed	HUC Importance to Species	Percent National Forest	Risk to Species Viability from predicted increased sediment	NFS Ownership Importance
Pink Mucket ( <i>Lampsilis abrupta</i> )	Poteau Headwaters	High	36.26	Moderate	Outcome 4
	Flat Creek	High	2.56	High	Outcome 5

*Determination of Direct, Indirect, and Cumulative Effects and Findings*

The influence of Ouachita NF management activities on the Pink Mucket is summarized here. Refer to Table 3 for more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire	X				
Timber Harvest & Regeneration Activities		X			
Forest Regeneration Site Preparation		X			
Herbicide	X				
Construction, Reconstruction, Maintenance		X			
Other Ground-Disturbing Activities		X			
Decommissioning and Rehabilitating		X			

There is a slight possibility that individual mussels could be killed directly by vehicles crossing streams. Indirect effects could include creation of barriers to passage of the fish host and/or excessive sedimentation from ground disturbing activities that might compromise the quality of the aquatic habitat. Cumulatively, sedimentation from national forest management activities is predicted to have no or discountable effects on mussel habitat due to forest-wide and management area specific standards (enumerated previously) designed to protect water quality and aquatic habitats. Over time, the cumulative effects of national forest management, including watershed, riparian area, and aquatic habitat management and restoration actions are expected to be beneficial for this species.

A determination of “not likely to adversely affect” is made for the pink mucket mussel, because the proposed Revised Forest Plan provides for habitat conditions beneficial to this species with standards that:

- (1) restore, conserve, maintain or improve the stability and function of riparian communities
- (2) protect soil and water quality
- (3) minimize soil movement caused by management activities
- (4) maintain streambank and channel stability
- (5) maintain free-flowing waters to allow for aquatic organisms’ passage.

### **Arkansas Fatmucket (*Lampsilis powellii*)**

#### *Environmental Baseline*

Arkansas fatmucket mussels live only in Arkansas and are endemic to the Saline, Caddo, and upper Ouachita Rivers (USDA FS 2000; USDI FWS 1992). Historically, this mussel species was found to be relatively common in preferred habitat; however, its frequency of detection and its population sizes have been consistently decreasing (Harris 1994; Harris 2000; Harris et al. 1997; Harris and Gordon 1998).

The Arkansas fatmucket is known to occur in the Irons Fork, Kates Creek, Muddy Fiddler, South Fork Ouachita, Blakely, Caddo Headwaters, Carney Creek, Alum Fork, North Fork Saline, and Middle Fork Saline 5<sup>th</sup> level watershed (HUC) streams. Alum Fork and Kates Creek are considered of high value to the viability of the Arkansas fatmucket. Irons Fork, Muddy Fiddler, Caddo Headwaters, Carney Creek, North Fork Saline, and Middle Fork Saline watersheds are considered of moderate value to the viability of this mussel range-wide, and Blakely is considered of low value to this species viability. All ten of these watersheds are in very good condition with low vulnerability to detrimental influences relative to all watersheds within the Forest; therefore, likelihood of adversely affecting current viability is moderate to low—Outcome 5. (See Ouachita rock-pocketbook section for definitions of Outcomes.)

This species is so rare and appears to be in decline in all watersheds where it is known to occur (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the South Fork

Ouachita watershed at risk. The extent and location of Ouachita National Forest lands with respect to the species is NOT conducive to positively influencing the viability of the species within this watershed—Outcome 4.

Table 8 displays the known occurrences of Arkansas fatmucket mussel by watershed, the importance of the 5<sup>th</sup> level HUC to the species, percent National Forest System ownership within the HUC, risk to species viability from predicted sediment increase by watershed, and importance of National Forest lands.

**Table 8. Watershed Occurrences and Importance of National Forest Lands for the Arkansas Fatmucket Mussel**

Species	5th Level Hydrologic Unit/Watershed	HUC Importance to Species	Percent National Forest	Risk to Species Viability from predicted increased sediment	NFS Ownership Importance
Arkansas Fatmucket ( <i>Lampsilis powellii</i> )	Kates Creek	High	44.79	Moderate	Outcome 5
	South Fork Ouachita	High	66.43	Moderate	Outcome 4
	Alum Fork	High	30.03	Moderate	Outcome 5
	Irons Fork	Moderate	37.90	Moderate	Outcome 5
	Muddy Fiddler	Moderate	72.54	Moderate	Outcome 5
	Caddo Headwaters	Moderate	64.12	Moderate	Outcome 5
	Carney Creek	Moderate	14.79	Moderate	Outcome 5
	North Fork Saline	Moderate	23.07	Moderate	Outcome 5
	Middle Fork Saline	Moderate	12.17	Moderate	Outcome 5
Blakely	Low	48.49	Moderate	Outcome 5	

*Determination of Direct, Indirect, and Cumulative Effects and Findings*

The influence of Ouachita NF management activities on the Arkansas Fatmucket is summarized here. Refer to Table 3 for more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire	X				
Timber Harvest & Regeneration Activities		X			
Forest Regeneration Site Preparation		X			
Herbicide	X				
Construction, Reconstruction,		X			

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Maintenance					
Other Ground-Disturbing Activities		X			
Decommissioning and Rehabilitating		X			

There is a slight possibility that individual mussels could be directly harmed by vehicles crossing streams. Indirect effects could include creation of barriers to passage of the fish host and/or excessive sedimentation from ground disturbing activities that might compromise the quality of the aquatic habitat. Cumulatively, sedimentation from national forest management activities is predicted to have no or discountable effects on mussel habitat due to forest-wide and management area specific standards (enumerated previously) designed to protect water quality and aquatic habitats. Over time, the cumulative effects of national forest management, including watershed, riparian area, and aquatic habitat management and restoration actions are expected to be beneficial for this species.

A determination of “not likely to adversely affect” is made for the Arkansas fatmucket mussel, because the proposed Revised Forest Plan provides for habitat conditions beneficial to this species with standards that:

- (1) restore, conserve, maintain or improve the stability and function of riparian communities
- (2) protect soil and water quality
- (3) minimize soil movement caused by management activities
- (4) maintain streambank and channel stability
- (5) maintain free-flowing waters to allow for aquatic organisms’ passage.

**Harperella (*Ptilimnium nodosum*)**

*Environmental Baseline*

Populations of harperella (*Ptilimnium nodosum*) on the Forest are limited to stream/river channels. This federally listed endangered vascular plant was first discovered on the Forest in September 1990. It is currently known from 11 locations on Forest lands on the Oden, Cold Springs, and Fourche Ranger Districts in Garland, Montgomery, Scott, and Yell Counties, as well as three privately owned sites (Susan Hooks, personal communication, 28 July 2005).

It typically grows on rocky shoals, within crevices in exposed bedrock, and occasionally 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 Forest, harperella occurs in perennial to near-perennial streams either on or among boulders or large cobbles, or on coarse sediment bars.

Where harperella exists on the Forest and elsewhere throughout its range, population numbers often fluctuate from year-to-year in response to factors such as rainfall levels, and winter conditions affecting seedlings and drought. There is significant dynamism in the persistence of individual stands with population levels documented to have fluctuated as much as 30 percent in four years (USFWS 1991). A recent status report by Hardcastle and Williams (2001) used repeatable methods to estimate populations in the Ouachita National Forest. Potential and existing habitat conditions for this species frequently change with flood events and are not readily quantifiable. The assumption has been made that this species may occur wherever suitable habitat exists within perennial stream channels.

Harperella is known to occur in the Cedar Creek, North Fork Ouachita and South Fork Fourche, and Muddy Fiddler 5<sup>th</sup> level watershed (HUC) streams. These four watersheds are considered of critical value to the viability of harperella. All four of these watersheds are in very good condition with low vulnerability to detrimental influences relative to all watersheds within the Forest; therefore, likelihood of adversely affecting current viability is low.

South Fork Fourche watershed reflects minimal impairment, but the known harperella occurrences are located on lands in private individual ownership. Species viability is potentially at risk in the watershed; however, the extent and location of Ouachita National Forest lands with respect to the species is conducive to positively influencing the viability of the species within this watershed—Outcome 3. (See Ouachita rock-pocketbook section for definitions of Outcomes.)

Cedar Creek, North Fork Ouachita, and Muddy Fiddler also reflect minimal impairment; the harperella localities are located on lands in Forest ownership, where likelihood of maintaining viability is high—Outcome 1.

Table 9 displays the known occurrences of harperella by watershed, the importance of the 5<sup>th</sup> level HUC to the species, percent National Forest System ownership within the HUC, risk to species viability from predicted sediment increase by watershed, and importance of National Forest lands.

**Table 9. Watershed Occurrences and Importance of National Forest Lands for Harperella**

Common Name	5th Level Hydrologic Unit/Watershed	HUC Importance to Species	Percent National Forest	Risk to Species Viability from predicted increased sediment	NFS Ownership Importance
Harperella ( <i>Ptilimnium nodosum</i> )	Cedar Creek	Critical	80.50	Low	Outcome 1
	South Fork Fourche	Critical	54.26	Low	Outcome 3
	Muddy Fiddler	Critical	72.54	Low	Outcome 1
	North Fork Ouachita	Critical	71.41	Low	Outcome 1

*Determination of Direct, Indirect, and Cumulative Effects and Findings*

The influence of Ouachita NF management activities on Harperella is summarized here. Refer to Table 3 for more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire	X				
Timber Harvest & Regeneration Activities		X			
Forest Regeneration Site Preparation		X			
Herbicide	X				
Construction, Reconstruction, Maintenance		X			
Other Ground-Disturbing Activities		X			
Decommissioning and Rehabilitating		X			

There is a slight possibility that individual plants could be directly harmed by vehicles crossing streams. Indirect effects could include creation of barriers to passage of the fish host and/or excessive sedimentation from ground disturbing activities that might compromise the quality of the aquatic habitat. Cumulatively, sedimentation from national forest management activities is predicted to have no or discountable effects on aquatic habitat due to forest-wide and management area specific standards (enumerated previously) designed to protect water quality and aquatic habitats. Over time, the cumulative effects of national forest management, including watershed, riparian area, and aquatic habitat management and restoration actions are expected to be beneficial for this species.

A determination of “not likely to adversely affect” is made for harperella, because the proposed Revised Forest Plan provides for habitat conditions beneficial to this species with standards that:

- (1) restore, conserve, maintain or improve the stability and function of riparian communities
- (2) protect soil and water quality
- (3) minimize soil movement caused by management activities
- (4) maintain streambank and channel stability
- (5) maintain free-flowing waters to allow for aquatic organisms’ passage.

### **Leopard Darter (*Percina pantherina*)**

#### *Environmental Baseline*

The federally threatened leopard darter is endemic to the Little River system in Arkansas and Oklahoma. While often quite abundant in its preferred habitats, the leopard darter habitat is usually restricted to small areas and can be quite disjunct. The leopard darter is generally found to occur in small to moderate-sized clear upland streams and rivers of moderate gradient. During non-spawning periods, it is usually found in pools of creeks and rivers favoring the cobble, small boulder habitat in the shallow areas of pools near the end of riffles. They are known to seek out the deep, cool pools during the hottest summer months (USDA FS 2000).

The leopard darter has historically had very limited distribution, and is known to occur only in portions of five small, swift streams: the Cossatot River and Robinson Fork (the Rolling Fork River) in Arkansas; Glover and Little Rivers in Oklahoma; and the Mountain Fork River in both states (Robison and Buchanan 1988). Unfortunately, this restricted range was further reduced by impoundments of three rivers, forming Lakes Gillham, Broken Bow, and Pine Creek (USDA FS 2000). Leopard darter habitat below the dams was decimated by reservoir releases.

The leopard darter is known to occur in the Glover, Two-mile, Beech, Broken Bow Lake, Upper Rolling Fork, and Cossatot Headwaters 5<sup>th</sup> level watershed (HUC) streams. The first four watersheds are considered of critical value to the viability of the leopard darter, and the last two of moderate value. All six of these watersheds are in very good condition with low vulnerability to detrimental influences relative to all watersheds within the Forest; therefore, likelihood of adversely affecting current viability from Forest management activities is low—Outcome 4. (See Ouachita rock-pocketbook section for definitions of Outcomes.)

This species is fairly rare in all watersheds where it is known to occur (population is at very low density and/or at only a few local sites) that random events (accidents, weather events) may place persistence of the species within the watershed at risk. The extent and location of

Ouachita National Forest lands with respect to the species is NOT conducive to positively influencing the viability of the species within this watershed—Outcome 5.

Table 10 displays the known occurrences of leopard darter by watershed, the importance of the 5<sup>th</sup> level HUC to the species, percent National Forest System ownership within the HUC, risk to species viability from predicted sediment increase by watershed, and importance of National Forest lands.

**Table 10. Watershed Occurrences and Forest Ownership Importance for the Leopard Darter**

Species	5th Level Hydrologic Unit/Watershed	HUC Importance to Species	Percent National Forest	Risk to Species Viability from predicted increased sediment	NFS Ownership Importance
Leopard Darter ( <i>Percina pantherina</i> )	Glover	Critical	16.82	Low	Outcome 5
	Two-mile	Critical	40.16	Low	Outcome 4
	Beech	Critical	15.31	Low	Outcome 5
	Broken Bow Lake	Critical	29.32	Low	Outcome 5
	Upper Rolling Fork	Moderate	0.14	Low	Outcome 5
	Cossatot Headwaters	Moderate	31.46	Low	Outcome 5

*Determination of Direct, Indirect, and Cumulative Effects and Findings*

The influence of Ouachita NF management activities on the leopard darter is summarized here. Refer to Table 3 for more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (as listed in Table 3)	No Effect	Not Likely to Adversely Affect			Likely to Adversely Affect
		Discountable	Insignificant	Beneficial	
Prescribed Fire	X				
Timber Harvest & Regeneration Activities		X			
Forest Regeneration Site Preparation		X			
Herbicide	X				
Construction, Reconstruction, Maintenance		X			
Other Ground-Disturbing Activities		X			
Decommissioning and Rehabilitating		X			

There is a slight possibility that individual eggs, larva and/or adults could be directly harmed by vehicles crossing streams. Indirect effects could include creation of barriers to passage of the fish host and/or excessive sedimentation from ground disturbing activities that might compromise the quality of the aquatic habitat. Cumulatively, sedimentation from national forest management activities is predicted to have no or discountable effects on mussel habitat due to forest-wide and management area specific standards (enumerated previously) designed to protect water quality and aquatic habitats. Over time, the cumulative effects of national forest management, including watershed, riparian area, and aquatic habitat management and restoration actions are expected to be beneficial for this species.

A determination of “not likely to adversely affect” is made for the leopard darter, because the proposed Revised Forest Plan provides for habitat conditions beneficial to this species with standards that:

- (1) restore, conserve, maintain or improve the stability and function of riparian communities
- (2) protect soil and water quality
- (3) minimize soil movement caused by management activities
- (4) maintain streambank and channel stability
- (5) maintain free-flowing waters to allow for aquatic organisms’ passage.

### **Critical Habitat for the Leopard Darter (*Percina pantherina*)**

#### *Environmental Baseline*

The U.S. Fish and Wildlife Service designated Critical Habitat in the Little River system for the leopard darter (USFWS 1984). Those segments occurring within the Ouachita NF are:

- (1) a 16.5-mile segment of the Glover River, the last free-flowing river in Oklahoma, and
- (2) almost two miles of the Mountain Fork River upstream from Broken Bow Lake.

Both of these Critical Habitat segments occur within Ouachita NF Management Area 20—Wild and Scenic River Corridors. Little vegetation management activities is planned for these corridors, as these areas are unsuitable in their entirety for timber production.

### **Standards applicable to all of Management Area 20—Wild and Scenic River Corridors**

- 20.01 Until designation decisions are made or additional river studies are completed, National Forest System lands associated with eligible river corridors (see tables within Management Area 20) will be managed to perpetuate their eligibility for designation. Management activities may enhance conditions consistent with maintaining the eligibility of the subject river corridors.
- 20.02 Projects must not include development of hydroelectric power facilities or other impoundments.
- 20.03 Livestock grazing levels will not be increased. Measures will be taken to minimize livestock use of the rivers themselves, including construction of alternative water sources outside the corridors. No livestock distribution facilities or convenience structures (i.e. salting and dusting stations, corrals) will be constructed or placed in MA 20.
- 20.04 Minimize visual impacts from prescribed burns, insect and disease control activities, enhancement plantings, salvage operations, trail construction, and maintenance activities.
- 20.05 No new special uses or permits for utility or transmission lines will be considered unless there is no reasonable alternative, and scenic, recreational, and fish and wildlife values have been evaluated.
- 20.06 Insect and disease control actions will be limited to outbreaks that threaten the scenic character of the corridor or resources values of adjacent federal or non-federal lands. Selected control measures will be those that have the least possible impact on the “outstandingly remarkable” features of the river corridor while still effectively limiting the outbreak.

### **Standards specific to (20c) the Glover and Mountain Fork Rivers Corridor**

- 20c.01 Construction of structures to improve fish and game habitat; river access; grazing; protection from fire, insects, or disease; fuels management (as specified in the Fire Management Plan); and rehabilitation or stabilization of damaged resources must be carried out in such a manner that the outstandingly remarkable values of the river corridor are not impaired. Make no substantial additions to existing improvements or structures, unless necessary for safety or to improve environmental conditions.
- 20c.02 Mining related operations can have no more than one-half acre of surface impact unreclaimed during the course of the operation.
- 20c.03 Construct no major public use areas. Design simple recreation facilities to protect the values of the river area and provide for the safety and convenience of the users in keeping with a natural setting.
- 20c.04 Road construction not associated with recreation development will be limited to temporary roads built to the minimum level to meet resource management needs.

*Determination of Direct, Indirect, and Cumulative Effects and Findings*

The influence of Ouachita NF management activities on Critical Habitat for the leopard darter is summarized here. Refer to Table 3 for more information about each “Potential Forest Management Activity” category.

Potential Forest Management Activities (as listed in Table 3)	No Effect to Critical Habitat	Not Likely to Adversely Modify Critical Habitat			Likely to Adversely Modify Critical Habitat
		Discountable	Insignificant	Beneficial	
Prescribed Fire	X				
Timber Harvest & Regeneration Activities	X				
Forest Regeneration Site Preparation	X				
Herbicide	X				
Construction, Reconstruction, Maintenance		X			
Other Ground-Disturbing Activities		X			
Decommissioning and Rehabilitating		X			

Excessive sedimentation from ground disturbing activities could but is unlikely to modify or compromise this Critical Habitat. Cumulatively, sedimentation from national forest management activities is predicted to have no or discountable effects on modification of leopard darter Critical Habitat due to forest-wide and management area 20 and management area 9 specific standards (enumerated previously) designed to protect water quality and aquatic habitats. Over time, the cumulative effects of national forest management, including watershed, riparian area, wild and scenic river corridor, and aquatic habitat management and restoration actions are expected to be beneficial for this Critical Habitat.

A determination of “not likely to adversely modify critical habitat” is made for the Critical Habitat for the leopard darter, because the proposed Revised Forest Plan provides measures to assure maintenance efforts beneficial to critical habitat conditions for the leopard darter with standards that:

- (1) restore, conserve, maintain or improve the stability and function of riparian communities
- (2) protect soil and water quality
- (3) minimize soil movement caused by management activities
- (4) maintain streambank and channel stability
- (5) maintain free-flowing waters to allow for aquatic organisms’ passage.

## Conclusion

The objectives of this Biological Assessment (BA) were to:

Comply with the requirements of the Endangered Species Act (ESA) of 1973, as amended, so that actions by federal agencies will not jeopardize the existence of federally listed species, or destroy, or adversely modify their critical habitat.

Assess the effects that implementation of the revised Forest Plan will have on federally Threatened and Endangered species known to exist on or near the Ouachita NF.

Provide biological input to ensure Ouachita NF compliance with the National Forest Management Act (NFMA) of 1976 and Forest Service Manual (FSM) 2670.

The Forest Service will apply the Forest Plan's applicable standards to protect and conserve these species and their habitats, and will continue consulting with the USFWS on projects as required. This document was prepared in partial fulfillment of requirements of informal and formal consultation with the United States Fish and Wildlife Service.

Date: 02 August 2005

Signature of Lead Preparer:

Betty G. Crump – Ecologist, Planning */s/ Betty G. Crump*

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