

## **BIOLOGICAL EVALUATION OF FEDERALLY LISTED SPECIES**

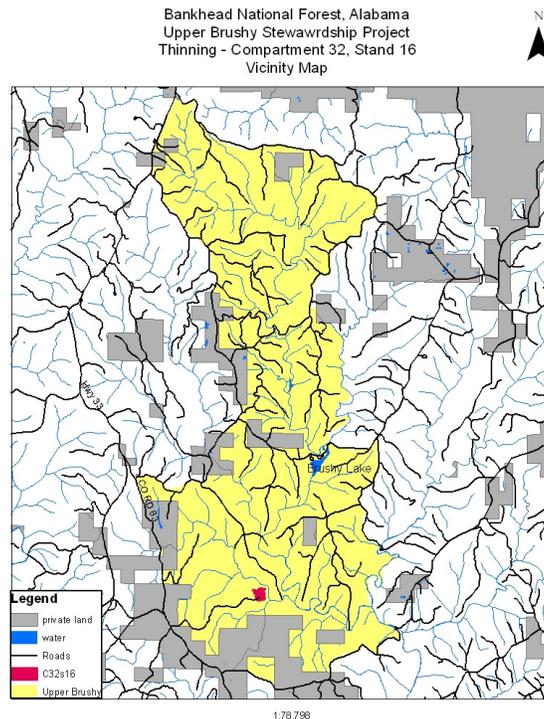
### **Upper Brushy Stewardship Project Commercial Thinning**

#### **Bankhead National Forest Winston County, Alabama**

Deciding Officer: District Ranger Glen D. Gaines  
Biological Evaluation Prepared by Biological Scientist Allison Cochran  
PO Box 278  
Double Springs, AL 35553  
205-489-5111  
[ggaines@fs.fed.us](mailto:ggaines@fs.fed.us)  
[jacochran@fs.fed.us](mailto:jacochran@fs.fed.us)

**SUMMARY:** The purpose of the project is to commercially thin a loblolly pine plantation in the Upper Brushy Watershed in Winston County. The area to be thinned is approximately 26 acres in size. The project site is located on Forest Service Road 250 in the Moreland Community. The purpose and need of the project is to improve forest stand health; to reduce the risk of southern pine beetle infestation; and to facilitate restoration of native forest communities, specifically fire adapted pine woodlands. This project is part of the Upper Brushy Stewardship Project.

This project is “not likely to adversely affect” the Indiana bat and will have “no effect” on the remaining federally listed species for the Bankhead National Forest. The project does not destroy or adversely modify critical mussel habitat. Concurrence with the U.S. Fish and Wildlife Service is required.



**INTRODUCTION:** This Biological Evaluation (BE) addresses the effects of the following activity on federally-listed Proposed, Endangered and Threatened species on the Bankhead National Forest. The project proposal is to commercially thin a loblolly pine plantation. The purpose and need of the project are to improve forest health, to reduce the risk of insect and disease (southern pine beetle infestation), and to facilitate restoration of native forest communities, specifically fire adapted pine woodlands. This biological evaluation addresses commercial thinning in one stand (Compartment 32, Stand 16) in the Upper Brushy Watershed. This site was inadvertently left out of the Forest Health and Restoration Project Environmental Impact Statement (FHRP EIS) but meets the same criteria that were used in selecting stands for thinning under that project. In that project, commercial thinning was to be completed on 9,452 acres. The Environmental Impact Statement was completed for the Forest Health and Restoration Project (FHRP) in 2003. This stand, in addition to others evaluated in the FHRP EIS, will be part of the Upper Brushy Stewardship Project.

Compartment	Stand	Acres	Treatment Method
32	16	26	Commercial Thinning

The purpose of this Biological Evaluation (BE) is to determine whether the proposed action is likely to affect an endangered, threatened, proposed, or sensitive species. Forest Service Manual 2672.4 provides guidance to review programs and activities for possible effects to proposed, endangered, threatened, and sensitive species and to document findings. The objectives of this Biological Evaluation are to ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant or animal species or contribute to trends toward Federal listing of any species; to comply with the requirements of the Endangered Species Act that actions of Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species; and to provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision-making process.

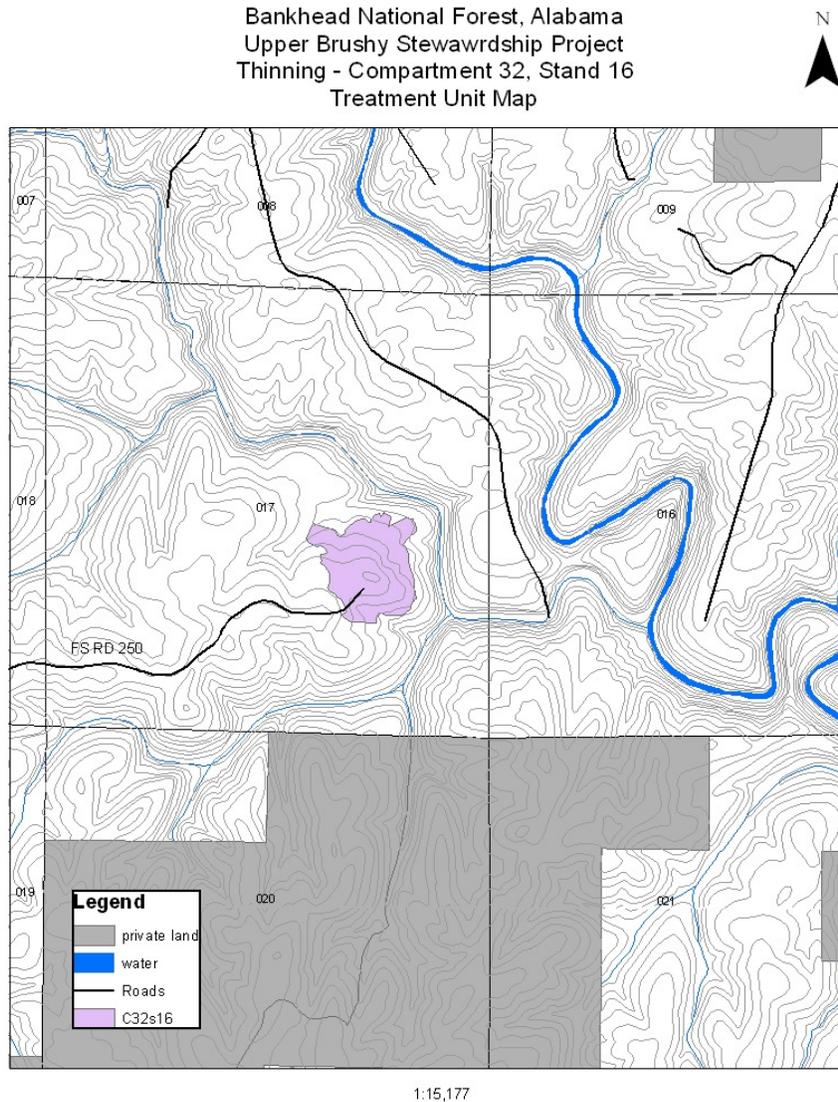
Compartment 32, Stand 16 will be commercially thinned as part of the Upper Brushy Stewardship Project. The area is an unthinned loblolly pine forest, which was planted in 1988. The stand is managed with regular short-rotation prescribed burning. The area is proposed for thinning between 2009-2012. The result will be an open pine stand with improved resistance to insect and disease outbreak. The stand will be managed to restore pine woodland structure and function over time. Thinning is the first step in restoring the woodland structure. The result will allow for restoration and maintenance of native fire adapted woodlands. The treatment area is located in the uplands and does not include streams. No rare communities will be treated by this project. A small, highly disturbed wetland is present in the stand. It will be excluded from the treatment area.

The area proposed for thinning is in Section 17, Township 9 South and Range 7 West in Winston County. It is located on Forest Service Road 250 in the Moreland Community, south of Grayson. The area drains into Collier Creek.

The treatment stand is within the Upper Brushy Stewardship Project Area and the Upper Brushy Creek 5<sup>th</sup> level watershed (HUC watershed). The Upper Brushy watershed is characterized by gently sloped ridges and pronounced valleys. Many of the larger streams are incised in picturesque gorges. Landscape character includes rural and naturally appearing landscapes. Virtually the entire watershed is forested. National Forest land occupies about 8/10<sup>th</sup> of the area.

The Upper Brushy Stewardship Project Area is within Management Prescription 7E2, Dispersed Recreation Areas with Vegetation Management, as defined in the Revised Land and Resource

Management Plan for the National Forests in Alabama (RLRMP), 2004. The emphasis in 7E2 is on management that provides a variety of dispersed recreation opportunities, improving settings for outdoor recreation, and enhancing visitor experiences, in a manner that protects and restores the health, and diversity of the land. Timber harvest and vegetative manipulations are used to achieve recreational, wildlife, ecosystem restoration, or aesthetic values. The compartment 32, Stand 16 thinning unit is within Area 2 as identified in the Bankhead’s Forest Health & Restoration Project (FHRP) Environmental Impact Statement, 2003. The desired conditions in the uplands in Area 2 are shortleaf pine woodlands and oak and oak-pine woodlands.



The Bankhead National Forest is located within the northwest corner of Alabama and lies within Lawrence, Winston and Franklin counties. It is comprised of approximately 181,470 acres of forestland. The forest cover varies in both cover type and age class but is mostly a mixture of mature hardwoods and pine. The proposed project is located in the northern portion of Bankhead National Forest, near the Moreland community, in Winston County.

**CONSULTATION HISTORY:**

The Forest Health and Restoration Project and Environmental Impact Statement which outlines restoring native community types through reforestation and commercial thinning on almost 9,452 acres of the Bankhead was reviewed by the Fish and Wildlife Service during 2003. The Fish and Wildlife Service has historically participated on the Bankhead Liaison Panel. Native forest community restoration on the Bankhead has been the primary discussion topic of the liaison panel for the past several years.

The Fish and Wildlife Service (FWS) has reviewed and concurred with many past projects that were similar in treatment method and project goals. Examples include commercial thinning, hurricane and tornado salvage timber removal, mechanical fuels reduction/midstory control through mulching and chainsaw removal, precommercial thinning and release, and shortleaf and longleaf pine planting.

The project tiers to the National Forests in Alabama’s Revised Land and Resource Management Plan (RLRMP) and associated Biological Assessment and Evaluation. The proposed treatment areas are in Management Prescription 7E2 as identified in the RLRMP. This project tiers to the BNF Forest Health and Restoration Project (FHRP) and associated Biological Assessment and Evaluation. The areas are in Area 2 as identified in the FHRP.

**FEDERALLY LISTED T&E SPECIES EVALUATED:**

District Biological Scientist Allison Cochran conducted a field review of the project site on February 20, 2009. The Bankhead National Forest (BNF) district office keeps current records of locations of known listed species throughout the area which were reviewed as part of this evaluation. The project area was surveyed for presence of Federally listed and Forest Service sensitive species. None were present.

This evaluation considered species range, life history information, available habitat information, and known locations to determine which species to evaluate.

Federally-listed Proposed, Threatened or Endangered (T&E) species that may occur or are known to occur on the Bankhead National Forest (BNF) and must therefore be considered for potential effects of management are as follows:

<i>Scientific Name</i>	<i>Common Name</i>	<i>Status</i> <sup>1</sup>	<i>Taxonomic Group</i>	<i>Bankhead NF Distribution</i>	<i>Habitat Element</i>
<i>Myotis grisescens</i>	Gray bat	E	Mammal	F1	Caves
<i>Myotis sodalis</i>	Indiana bat	E	Mammal	F1	Caves – Winter Forests – Spring/Summer
<i>Picoides borealis</i>	Red-cockaded woodpecker	E	Bird	FH	Pine Woodlands
<i>Sternotherus depressus</i>	Flattened musk turtle	T	Reptile	F1	Perennial Streams
<i>Epioblasma metastrata</i>	Upland combshell	E	Mussel	FH	Perennial Streams
<i>Epioblasma turgidula</i>	Turgid blossom pearly mussel	E	Mussel	FH	Perennial Streams
<i>Epioblasma brevidens</i>	Cumberlandian combshell	E	Mussel	FH	Perennial Streams Bear Creek
<i>Hamiota altilis</i>	Fine-lined pocketbook	E	Mussel	FH - FP	Perennial Streams U/L Sipsey Fork U/L Brushy

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 Federally-listed Species BE

Scientific Name	Common Name	Status <sup>1</sup>	Taxonomic Group	Bankhead NF Distribution	Habitat Element
<i>Lampsilis abrupta</i>	Pink mucket (pearly mussel)	E	Mussel	E- FH	Perennial Streams
<i>Hamiota perovalis</i>	Orange-nacre mucket	T	Mussel	F- CH	Perennial Streams U/L Sipsey Fork U/L Brushy
<i>Medionidus acutissimus</i>	Alabama moccasinshell	T	Mussel	F - CH	Perennial Streams U/L Sipsey Fork U/L Brushy
<i>Medionidus parvulus</i>	Coosa moccasinshell	E	Mussel	FH	Perennial Streams U/ L Sipsey Fork
<i>Pleurobema rubellum</i>	Warrior (Dark) pigtoe	E	Mussel	F - CH	Perennial Streams U/L Sipsey Fork U/L Brushy
<i>Pleurobema perovatum</i>	Ovate clubshell	E	Mussel	FP - CH	Perennial Streams U Sipsey Fork L Brushy
<i>Pleurobema plenum</i>	Rough pigtoe	E	Mussel	FH	Perennial Streams
<i>Ptychobranchus greeni</i>	Triangular kidneyshell	E	Mussel	F3 - CH	Perennial Streams U/L Sipsey Fork U/L Brushy
<i>Necturus alabamensis</i>	Black Warrior Waterdog	S/C	Amphibian	F1	Perennial Streams U/L Sipsey Fork U/L Brushy
<i>Etheostoma phytophilum</i>	Rush Darter	S/C	Fish	F1	Perennial Streams Clear
<i>Dalea foliosa</i>	Leafy prairie-clover	E	Plant	FP	Limestone Glades
<i>Lesquerella lyrata</i>	Lyrate bladderpod	T	Plant	FP	Limestone Prairies / Glades
<i>Marshallia mohrii</i>	Mohr's Barbara's buttons	T	Plant	FP	Riparian Areas
<i>Leavenworthia crassa</i>	Fleshy fruit Gladecress	S/C	Plant	F1	Limestone Glades
<i>Sagittaria secundifolia</i>	Kral's water-plantain	T	Plant	F1	Riparian Areas
<i>Platanthera integrilabia</i>	White Fringeless Orchid	S/C	Plant	F1	Wetlands
<i>Thelypteris pilosa</i> var al.	Alabama streak-sorus fern	T	Plant	F1	Rock Bluffs
<i>Xyris tennesseensis</i>	Tennessee yellow-eyed grass	E	Plant	FP	Riparian Areas or Wetlands
<i>Apios priceana</i>	Price's Potato Bean	T	Plant	FP	Riparian Areas w/ Limestone Rocks

Status - T=Threatened; E= Endangered; C=Candidate; S=Sensitive(USFS Southeast Region, 2001 Revision) CH=Critical Habitat designated.  
 Distribution- FP=Forest Potential, No Known Occurrences;F1=1-5 known occurrences; F2=6-20 known occurrences; f3=21-100 known occurrences; FH = Forest Historic

\*According to Williams, et. al., 2008, the exact distributions of *Hamiota altilis* and *H. perovalis* are uncertain. Because the exact distributions remain unresolved, *H. altilis* is considered restricted to eastern and southern reaches of the Mobile Basin (not found on the Bankhead National Forest) and *H. perovalis* restricted to the western and southern reaches of the basin (including the Bankhead National Forest).

This list of species to be evaluated for Bankhead National Forest projects was derived from the BA and BE for implementation of the Revised Land and Resource Plan (RLRMP), National Forests in Alabama (2004). The USFWS - Daphne Ecological Services Field Office's website listing of Endangered Species by county (updated 10/06/2008) was also consulted for Winston and Lawrence counties.

**Species shaded in dark gray in the above table will not be affected by the proposed project.** Habitats and/or occurrences of the species within the dark gray shaded areas are outside of the project area or habitats will not be affected by the project. No effects (direct, indirect, or cumulative) are expected to the species, or the known or potential habitats for these species. The rationale for these determinations is that the species' habitats will not be impacted by the proposed project.

## **FEDERALLY LISTED T&E SPECIES ANALYZED:**

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

#### **Environmental Baseline**

The Indiana bat is federally listed as an endangered species and listed by the State of Alabama as a Priority One Species – Highest Conservation Concern. This bat is generally associated with limestone caves in the eastern United States. Small populations of Indiana and Gray bats were found in two caves on the Bankhead National Forest (BNF) in February, 1999. Their presence has been verified by Forest Service cave monitoring efforts conducted bi-annually during 2001, 2003, 2005, 2007, and 2009. Their presence has also been verified by Forest Service, Alabama Department of Conservation and Natural Resources, and Alabama A&M University biologists bat harp trapping efforts at cave entrances. Many other caves are present within the karst landscape of the northern Bankhead and may provide habitat for these species. Additional harp trapping, mist netting, and cave surveys conducted on BNF to date have found no other caves used by Indiana or Gray bats. As with other bats of deciduous forests, it is extremely difficult to accurately determine the number of individual Indiana bats present during the summer. Due to apparently small populations, they are difficult to capture by common techniques such as mist netting. Thus it is not known if or to what extent Indiana bats use Bankhead's forests during the non-hibernating season. Based upon very limited information on the presence and distribution of Indiana bats in Bankhead, there is an assumption that Indiana bats may be present within appropriate habitat on the Bankhead from spring to fall. No maternity colonies or summer roosting have been documented on Bankhead. However, in August 2008, sixteen Indiana bats were captured exiting a known hibernaculum. Of these, thirteen were adult males, two were adult females and one was a juvenile male. Additionally, Stone and Battle documented Indiana bats roosting in trees around known hibernaculum during the fall swarm period (October) in 2003.

Indiana bats forage in and around the tree canopy of floodplain, riparian and upland forests. Within floodplain forests Indiana bats show a preference for areas where canopy closure ranges from 30% to 70%. Streams, associated floodplain forests, and impounded bodies of water are preferred foraging habitats for pregnant and lactating Indiana bats, which may fly up to 1.5 miles from upland roosts to feed. In general, Indiana bats forage within the canopy of upland forests, over clearings with early successional vegetation, along the borders of croplands, along wooded fence rows and over farm ponds in pastures. Indiana bats use larger trees with hollows or loose bark for their summer roosts and maternity colonies, but spend their winters hibernating in caves. The main threats to this species are availability of natural roost structures, loss of winter hibernacula and human disturbance.

#### *Maternity Roosting (summer) habitat*

During summer months, maternity colonies roost under sloughing bark of trees (alive and dead) of many species. Reproductive females require multiple alternate roost trees to fulfill summer habitat needs.

[Adults forage on winged insects within three miles of the occupied maternity roost.](#) In summer, most reproductive females occupy roost sites under the exfoliating bark of dead trees that retain large thick slabs of peeling bark. 97 % of maternity roosts are found within deciduous trees. Habitats in which maternity roosts occur include riparian zones, bottomland and flooded habitats, wooded wetlands and upland communities.

Information and research about summer roosting sites is extremely limited south of Tennessee. Recent work has been completed in eastern Tennessee and western North Carolina on Indiana bat maternity colonies. The colonies were found to use primary and secondary roosting sites. In all cases the bats were found under the exfoliating bark of either pine or hardwood trees, with most of the roosts being in snags.

During the summer months, possible threats relate to the loss and degradation of forested habitat. [It is difficult to quantify summer roosting habitat for the Indiana bat at a range-wide, regional or local level due to the variability of known roost sites and lack of knowledge about landscape level habitat characteristics of maternity roosts.](#) [Maternity roost sites in the south are known from Virginia, North Carolina and Tennessee.](#) One researcher suggests in the south, retention of large pine snags and preservation of over-mature trees will provide a sustained future supply of roost trees. Maternity roosts have not been found within the Bankhead National Forest to date. [Forest management practices that affect occupied roost trees may have local impacts on Indiana bat populations. However, the bats live in highly altered landscapes, depend on an ephemeral resource, dead and dying trees and may be very adaptable.](#) Some [evidence suggests that these bats may respond positively to some degree of habitat disturbance.](#)

#### *Winter hibernation Habitat (Caves)*

[Wintering colonies require very specific climatic regimes within cold, humid caves or mines. Few sites provide these conditions, and approximately 85% of the entire known population inhabits less than a dozen caves or mine shafts.](#) There are 13 Indiana bat hibernacula in six states which are designated as critical habitat. Priority One hibernacula are defined as hibernation sites with recorded populations of more than 30,000 bats since 1960. Priority Two hibernacula have record of between 500 and 30,000 bats since 1960. Priority three hibernacula have records of 500 or fewer bats. The hibernacula on Bankhead National Forest are within the Priority Three category. Indiana bat populations have declined by about 60% since the 1960's. The total population of Indiana bats was estimated at 353,000 in 1997. The reasons for a continuing decline are not clear; [declines have continued despite efforts to protect all known major hibernacula.](#)

There are two known [hibernacula](#) on Bankhead, which are found in the northern portion of the Forest. [Recommended habitat management includes protecting known significant hibernacula from human impacts and retaining forested conditions around the entrances to significant hibernacula.](#) Although the two hibernacula on the Bankhead are not likely deemed as “significant” to the Indiana bat population, they are being monitored and protected. Protection of hibernacula is outlined in the Revised Land and Resource Management Plan (RLRMP) for the National Forests in Alabama. RLRMP requires a primary and secondary buffer zone around known hibernacula and those caves which have not yet been surveyed for Indiana bats. All activities within this buffer zone are evaluated by FS biological staff and coordinated with FWS prior to any action. Monitoring is being conducted within FWS and RLRMP guidelines.

[Research](#) conducted by Stone and Battle (Alabama A&M University) [has documented the use of tree roosts on Bankhead National Forests in the fall, prior to the winter hibernation period.](#) These areas were in close proximity (approximately 1 mile) to known hibernacula. [Swarming of both males and females and subsequent mating activity occurs at cave entrances prior to hibernation. During this period, bats roost under sloughing bark and in cracks of dead, partially-dead and live trees.](#)

The Indiana bat is known to hibernate in the northern portion of the Bankhead National Forest in Lawrence County. However, where these bats move upon emergence from Bankhead hibernacula is unknown. Movement from the hibernacula within Indiana bat range varies as radio-tagged males were reported to have traveled 2.5 to 10 miles in Kentucky, Missouri and Virginia. Females have been found to move from 50 to several hundred miles from the hibernacula to maternity roosts. Recent telemetry work with Indiana bats in the northeast has found them travelling from 17 to 92 miles from the hibernacula to summer maternity sites. In most all cases the bats used hardwood trees within or adjacent to wetlands for roost habitat.

The Forest Plan includes [general standards that ensure adequate roost habitat include](#) the following:

- [retention of snags whenever possible;](#)
- [prescribed burning \(to restore and maintain uncluttered, open midstory foraging conditions\)](#) will be conducted during the dormant season (winter months) and during the growing season (May to August). Burns conducted during the growing season will be conducted only when site specific monitoring indicates that the area is not occupied by the Indiana bat;
- [ensuring a continuous supply of oaks, hickories, and ash as well as other trees with exfoliating bark.](#)

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

Consideration of potential impacts to bats including hibernacula, swarming areas and maternity roosts follows.

#### *Hibernacula*

Indiana bats hibernate in caves (hibernacula) that meet their temperature requirements. These are caves that trap large volumes of cold air. The information from ongoing surveys indicates that very few caves on Bankhead National Forest are suitable for this activity. Many caves have been surveyed but only two sites have been verified to be hibernacula. Although efforts with Forest Service personnel and volunteers are ongoing, many caves have yet to be surveyed. The hibernacula are important because bats enter the hibernation period with only enough fat reserves to last until spring. Each disturbance within the hibernacula can cause a bat to use as much as 10 to 30 day supply of fat reserves. Disturbance during hibernation is considered to be a potentially fatal event. Most Indiana bats enter hibernation in November and emerge in late March or April.

Potential direct effects may include disturbance leading to mortality during hibernation. Potential indirect effects include alterations to the cave environment or surrounding habitat resulting in unsuitable hibernacula.

Revised Land & Resource Management Plan (RLRMP) standards and guidelines eliminate the potential for take of hibernating bats and the modification to cave habitat. All activities within primary and secondary cave protection zone are coordinated with the US Fish and Wildlife Service (FW-94). Until caves are surveyed for use by federally listed bats, they are assumed to be present and habitat is maintained for them by applying standards for occupied caves (9.F-56). For all caves suitable for supporting cave-associated species, a minimum buffer of 200 feet is maintained around portals and cave associated collapse and sinkholes (9.F-57).

Bankhead's database of known caves was reviewed to in relation to this commercial thinning project. Known hibernacula are over 10 miles from the thinning unit. Caves are not present within the Upper Brushy Stewardship Project area. There will be no effects to known or potential hibernacula from thinning loblolly pines from this upland stand.

#### *Swarming Areas*

Indiana bats move from their summer habitat towards hibernacula for fall swarming. Over a period of several weeks, bats arrive at hibernacula and fly in and out during the night. The fall swarming period is considered a critical part of the bat's life cycle as they are putting on weight for hibernation and it is a mating season.

RLRMP standards are in place to avoid possible harassment of swarming Indiana bats. All activities within primary and secondary cave protection zone are coordinated with the US Fish and Wildlife Service (FWS) (FW-94). Until caves are surveyed for use by federally listed bats, they are assumed to be present and habitat is maintained for them by applying standards for occupied caves (9.F-56). For all caves suitable for supporting cave-associated species, a minimum buffer of 200 feet is maintained around portals and cave associated collapse and sinkholes (9.F-57). As described above, Bankhead's database of known caves was reviewed. There are no hibernacula within the Upper Brushy Stewardship Project area. There are no unsurveyed caves or buffer zones within the area. Trees known to have been used as roosts by Indiana bats are protected from cutting and/or modification until they are not longer suitable as roost trees, unless their cutting is needed for safety. Consultation with FWS is required where roost tree cutting or modification is deemed necessary (FW-96). No trees known to have been used as roosts by Indiana bats are near the project. Snags are not intentionally felled unless needed to provide for immediate safety. Exceptions may be made for projects such as insect and disease control, salvage harvesting, and facility construction, after coordination with the FWS to determine appropriate protective measures for the Indiana bat (FW-97). No snags will be cut intentionally during this thinning project. To avoid harassment of swarming of Indiana bats, tree-cutting is prohibited between September 1 and December 1 within the primary and secondary zones of hibernacula (FW-105). This project will not take place within the primary or secondary zone of any cave.

#### *Maternity Roosts*

Indiana bat maternity roosts are generally considered to be large standing dead trees or other living trees with shaggy bark located in or near floodplain forests. It appears that Indiana bats select maternity roost trees based more upon structure (presence of flaking bark), size and location rather than by tree species. With few exceptions, maternity roosts within the range of Indiana bats, have been found in riparian forests or are within 0.62 miles of permanent streams. Maternity roosts in the southeastern United States are not well documented. In 1999 researchers located a maternity roost in a dead (42 inch diameter breast high - DBH) hemlock tree on Forest Service lands in western North Carolina. This was the farthest south a maternity roost had ever been found and the first report of use of conifers for this purpose. They have since found maternity roosts in eastern Tennessee located in a pine snag (15 inch DBH) in Great Smoky Mountains National Park, TN. Another primary roost was found in a 21 inch DBH pitch pine snag and alternate roost trees including pine snags, red oak snags, and a live sweet birch have also been found in eastern Tennessee. These records represent some of the first descriptions of Indiana bat maternity habitat in the southern United States.

Although Indiana bat maternity roosts have not been documented on Bankhead National Forest, they must be considered. RLRMP standards described above are in place to minimize the potential for take of an Indiana bat or loss of potential habitat. All activities within primary and secondary cave protection zone are coordinated with the US Fish and Wildlife Service (FWS) (FW-94). Until caves are surveyed for use by federally listed bats, they are assumed to be present and habitat is maintained for them by applying standards for occupied caves (9.F-56). For all caves suitable for supporting cave-associated species, a minimum buffer of 200 feet is maintained around portals and cave associated collapse and sinkholes (9.F-57). Bankhead's database of known caves was reviewed; there are no caves within the vicinity of the project. Trees known to have been used as roosts by Indiana bats are protected from cutting and/or modification until they are not longer suitable as roost trees, unless their cutting is needed for safety. Consultation with FWS is required where roost tree cutting or modification is deemed necessary (FW-96). No trees known to have been used as roosts by Indiana bats are near the project. Snags are not

intentionally felled unless needed to provide for immediate safety. Exceptions may be made for projects such as insect and disease control, salvage harvesting, and facility construction, after coordination with the FWS to determine appropriate protective measures for the Indiana bat (FW-97). Snags will not be felled during thinning unless threatening safe operations. To avoid harassment of swarming of Indiana bats, tree-cutting is prohibited between September 1 and December 1 within the primary and secondary zones of hibernacula (FW-105). This project will not take place within the primary or secondary zone of any cave.

A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time. Management activities are being conducted that will benefit habitat for Indiana bats in the form of thinning overstocked forest stands, conducting prescribed burns and midstory removal projects to open the understory and midstory canopy and allow for increased insect production and foraging opportunity, restoring native forest communities, protecting hibernacula and restoring water sources within known bat ranges. It is anticipated that these projects are improving bat habitat on the forest. The upland pine plantation proposed for thinning is currently to cluttered (overstocked) to be considered suitable habitat for the Indiana bat. There are no known caves and there are no element of occurrence records in the project vicinity. Cumulative effects include potential increase in available foraging habitat over time as woodland conditions are restored.

#### **Determination of Effect**

There are numerous protective mechanisms built into the Revised Land and Resource Management Plan for the Indiana bat as described above. RLRMP standards minimizes the potential for “take” of Indiana bat. Indiana bats have been documented during the fall swarm and hibernation periods on Bankhead. Recently, they have been documented in late summer in a known hibernaculum. The project area is over 10 miles from any hibernacula and Indiana bats are not known from the project area. The proposed project should improve foraging and roosting conditions for the Indiana bat. However, the potential for “take” cannot be completely eliminated. **Therefore, the determination for Indiana bat is “not likely to adversely affect”.**

#### **Flattened Musk Turtle (*Sternotherus depressus*)**

##### **Environmental Baseline**

The flattened musk turtle is an aquatic species that is found within the upper Black Warrior drainage. This species generally requires clear gravel bottomed streams with rocky outcroppings and pools 3 to 5 feet in depth. Clear streams are necessary for the production of filter feeders (mussels), which are the primary source of food for this species. The rocky crevices and outcroppings provide cover for the turtle. This species is found in the perennial streams of the Sipsey Fork, Brushy Creek, and Caney Creeks and their primary tributaries. It is also found in backwater sloughs of Lewis Smith Lake. Historically, a population existed in Clear Creek.

Flattened musk turtle surveys have been conducted on the Bankhead in 1986 and 1989 by Kenneth Dodd, US Fish and Wildlife Service; in 1991 by Robert Mount, Auburn University; in 1994 by Karen Schnuelle, Auburn University; in 1999 by Gregory Lein, Alabama Department of Conservation and Natural Resources; and in 2004 by Sherry Rogers and Ken Marion, UAB.

Threats to the flattened musk turtle include over collection, disease, habitat degradation from sedimentation and water pollution, habitat fragmentation and human-caused catastrophes and accidents (for example accidental spills).

The proposed project is within the same watershed of occupied habitat. Perennial streams are not included within the proposed thinning area.

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

Direct effects such as killing individual turtles or crushing eggs will not occur as a result of this project because perennial streams are not present in the thinning unit. Indirect effects would include altered water quality, sedimentation, temperatures, nutrient cycling, channel structure, flow or blockage of mussel host fish passage. Activities associated with this commercial thinning project will not alter any of these stream parameters. Perennial streams are not present within the treatment unit. However, indirect effects to waters of Brushy Creek could occur as a result of this project. Therefore, project mitigations are required to alleviate any adverse effects to potential flattened musk turtle habitat in Brushy Creek. Project mitigations include standards regarding riparian areas, riparian corridors and streamside management zones which are outlined in the Revised Land and Resource Management Plan for the National Forests in Alabama (RLRMP). These standards are in place to protect water quality, aquatic species and the terrestrial and aquatic ecosystems associated with streams, seeps, ponds, bogs, and springs. Based on these standards, this project will not affect aquatic or riparian species.

On-going Forest Service activities that may cumulatively affect the flattened musk turtle or potential turtle habitat include thinning of loblolly pine stands and site preparation and planting of shortleaf and longleaf pines through the Forest Health and Restoration Project (FHRP). These thinning and site preparation activities all include the project mitigations described above and identified in the RLRMP and FHRP Environmental Impact Statement. Therefore, those additional Forest Service activities will not cumulatively affect aquatic species. Existing and on-going activities potentially affecting aquatic species habitat are present throughout the Forest. These include existing dams and reservoirs which have fragmented and isolated aquatic habitat. Road stream crossings that have been identified as blocking aquatic passage are being removed or repaired as funding becomes available. The removal of the Forest Service Road 255 bridge in this watershed should improve passage. As southern pine beetle activity continues, streamside trees are lost which has the potential to affect stream temperatures and habitat structure. Historic and off-Forest activities will contribute to on-going effects, regardless of Forest Service actions.

### **Determination of Effect**

Based on project mitigations and the absence of perennial streams within the project sites, **there will be “no effect” on the flattened musk turtle** from implementation of the proposed project.

### **Mussels and Critical Habitat**

**Orange-nacre mucket** (*Hamiota perovalis*), **Alabama moccasinshell** (*Medionidus acutissimus*), **Warrior (dark) pigtoe** (*Pleurobema rubellum*), **ovate clubshell** (*Pleurobema perovatum*) **and triangular kidneyshell** (*Ptychobranthus greeni*) **and their critical habitat**

### **Environmental Baseline**

To varying degrees, all aquatic [T&E species are sensitive to alterations in habitat structure](#) (channel structure), [water quality, sediment, flow, and, in less obvious ways, to the quality and quantity of interaction](#) between aquatic habitat and [the riparian zone](#).

Current management standards regarding riparian areas, riparian corridors and streamside management zones are outlined in the Revised Land and Resource Management Plan for the National Forests in Alabama (RLRMP). These standards are in place to protect water quality, aquatic species and the terrestrial and aquatic ecosystems associated with streams, seeps, ponds, bogs, and springs.

The orange-nacre mucket occurs in the Alabama, Black Warrior, and Tombigbee River drainages. The orange-nacre mucket was historically known from Brushy Creek, Mulberry and Sipsey Forks in the Black Warrior River drainage in the area around Bankhead National Forest. Orange-nacre mucket and its critical habitat occur in the Upper Brushy Creek watershed in the vicinity of the project. It is also known from the Upper and Lower Sipsey Fork watersheds on

Bankhead. The orange-nacre mucket has disappeared from many streams within its historic range. Population estimates are unavailable for this species, although it is described as being common in a few streams in Bankhead National Forest. And, these populations within Bankhead may be stable, according to Nature Serve records. It is a species of medium creeks to large rivers. It is usually found in slow to moderate current in sand and gravel substrates. Threats to this species include habitat modification, sedimentation and water quality degradation. This species is reported to be relatively tolerant of nondestructive intrusion, though heavy recreational use of mussel habitat could be disruptive.

The Alabama moccasinshell occurs in most of the Mobile Basin, with the exception of the Tallapoosa River above the Fall Line. On Bankhead, the current range of the Alabama moccasinshell includes the headwaters of the Sipsey Fork in the Black Warrior River drainage (Brushy Creek) where this species is considered to be locally common and the populations stable. This mussel (small local populations) and its critical habitat are known from the Upper Brushy Creek watershed. High densities of this mussel are known from the Upper and Lower Sipsey Fork watersheds on Bankhead. The Alabama moccasinshell inhabits sand and gravel substrates in medium creeks to rivers. It may occur in slow to swift current. Threats to this species include habitat modification, sedimentation and water quality degradation.

The Warrior, or dark, pigtoe is endemic to the Black Warrior River drainage and Cahaba River system in Alabama. The current distribution of the Warrior or dark pigtoe is limited to the headwaters of the Sipsey Fork in Winston County, where it is most common, and the North River in Tuscaloosa and Fayette counties. This species is generally rare wherever it occurs. Population estimates are not known. But, this mussel species and its critical habitat are known from the Upper Brushy watershed and the project vicinity. It is also present in the Lower Brushy and Upper and Lower Sipsey Fork watersheds on Bankhead. The Warrior pigtoe is a species of creeks and medium to large rivers. It generally occurs in sandy gravel of shoal habitats. This species is sensitive to impoundment, habitat modification, sedimentation, and water quality degradation.

The ovate clubshell is endemic to the Mobile Basin of Alabama and Mississippi. The ovate clubshell has not been recorded on the BNF in recent years, although it is within their historic range. Potential habitat and critical habitat for the ovate clubshell are present within the Upper Brushy watershed. This is a species that occurs in riffles, runs and shoals of small creeks to large rivers. It is found in sand and gravel substrates.

The triangular kidneyshell is endemic to the Black Warrior and Tombigbee River drainages of the Mobile Basin in Alabama. Critical habitat and historic records for this species occur in the Upper Brushy watershed. The mussel is also known from the Upper and Lower Sipsey Fork watersheds. This mussel occurs in shoal habitats in a variety of stream sizes, ranging from small creeks to large rivers. It uses sand and gravel substrates.

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

Direct effects such as mortality of individuals will not occur as a result of this project because perennial streams are not within the project's treatment boundary. Indirect effects that would negatively affect mussel species include altered water quality, sedimentation, temperatures, nutrient cycling, channel structure, flow or blockage of mussel host fish passage. Activities associated with this thinning project will not alter any of these stream parameters. Perennial streams are not present within the project unit. Project mitigations will alleviate any adverse effects to potential mussel habitat within the Upper Brushy watershed. Project mitigations include standards regarding riparian areas, riparian corridors and streamside management zones which are outlined in the RLRMP. Based on these standards, this project will not affect aquatic or riparian species.

On-going Forest Service activities that may cumulatively affect these mussel species or potential mussel habitat include thinning of loblolly pine stands and site preparation and planting of shortleaf and longleaf pines through the Forest Health and Restoration Project (FHRP). These thinning and site preparation activities all include the project mitigations described above and identified in the RLRMP and FHRP Environmental Impact Statement. Therefore,

those additional Forest Service activities will not cumulatively affect aquatic species. Existing and on-going activities potentially affecting aquatic species habitat are present throughout the Forest. These include existing dams and reservoirs which have fragmented and isolated aquatic habitat. Road stream crossings that have been identified as blocking host fish passage are being removed or repaired as funding becomes available. The removal of the Forest Service Road 255 bridge in this watershed should improve passage. As southern pine beetle activity continues, streamside trees are lost which has the potential to affect stream temperatures and habitat structure. Historic and off-Forest activities will contribute to on-going effects, regardless of Forest Service actions.

#### **Determination of Effect**

Based on project mitigations and the absence of perennial streams within the thinning unit, there will be **“no effect” on the five federally listed mussel species evaluated or their critical habitat.**

#### **Black Warrior Waterdog**

##### **Environmental Baseline**

The Black Warrior waterdog is an aquatic salamander that is known to occur in the Lower and Upper Sipsey Fork and Lower and Upper Brushy watersheds in the Bankhead. Element of Occurrence records for this waterdog include Brushy Creek in the vicinity of the Upper Brushy Stewardship Project area. Optimal habitat is described as free-flowing large streams or small rivers with forested streamside zones. Detectable flow and leaf packs within streams are required. Other factors contributing to habitat quality include a low silt load and substrate deposits, low nutrient content and bacterial counts, moderate temperatures, and minimal overall chemical pollution. This salamander is currently known from 10 locations, the populations are highly fragmented, the population densities are low, and habitat conditions are degraded in general. Habitat degradation and fragmentation are threats to this species.

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

This salamander and its habitat do not exist within the proposed thinning unit. Perennial streams are not present within the site. Therefore, there will be no direct effects. Indirect effects may include altered water quality, sedimentation, flow blockage, or change to riparian area vegetation or structure. However, these indirect effects will not occur due to RLRMP standards. Standards regarding riparian areas, riparian corridors and streamside management zones are outlined in the RLRMP. These standards are in place to protect water quality, aquatic species and the terrestrial and aquatic ecosystems associated with streams, seeps, ponds, bogs, and springs. Based on these standards, this project will not affect aquatic or riparian species. Mitigation measures are in place to preclude sedimentation of streams and no significant soil disturbance is anticipated with the project.

On-going Forest Service activities that may cumulatively affect Black Warrior waterdog or its potential habitat include thinning of loblolly pine stands and site preparation and planting of shortleaf and longleaf pines through the Forest Health and Restoration Project (FHRP). These thinning and site preparation activities all include the project mitigations described above and identified in the RLRMP and FHRP Environmental Impact Statement. Therefore, those additional Forest Service activities will not cumulatively affect aquatic species. Existing and on-going activities potentially affecting aquatic species habitat are present throughout the Forest. These include existing dams and reservoirs which have fragmented and isolated aquatic habitat. Road stream crossings that have been identified as blocking passage or flow are being removed or repaired as funding becomes available. The removal of the Forest Service Road 255 bridge in this watershed should improve passage. As southern pine beetle activity continues, streamside trees are lost which has the potential to affect stream temperatures and habitat structure. Historic and off-Forest activities will contribute to on-going effects, regardless of Forest Service actions.

#### **Determination of Effect**

Based on project mitigations and the absence of perennial streams within the project site, there will be **“no effect” on the Black Warrior Waterdog.**

**FEDERALLY LISTED T&E SPECIES WITH DETERMINATIONS:**

Scientific Name	Common Name	Determinations of Effect
<i>Myotis grisescens</i>	Gray bat	No Effect
<i>Myotis sodalis</i>	Indiana bat	Not Likely to Adversely Affect
<i>Picoides borealis</i>	Red-cockaded woodpecker	No Effect
<i>Sternotherus depressus</i>	Flattened musk turtle	No Effect
<i>Epioblasma metastrata</i>	Upland combshell	No Effect
<i>Epioblasma turgidula</i>	Turgid blossom pearly mussel	No Effect
<i>Epioblasma brevidens</i>	Cumberlandian combshell	No Effect
<i>Lampsilis altilis</i>	Fine-lined pocketbook	No Effect
<i>Lampsilis orbiculata</i>	Pink mucket (pearly mussel)	No Effect
<i>Lampsilis perovalis</i>	Orange-nacre mucket & Critical Habitat	No Effect
<i>Medionidus acutissimus</i>	Alabama moccasinshell & Critical Habitat	No Effect
<i>Medionidus parvulus</i>	Coosa moccasinshell	No Effect
<i>Pleurobema furvum</i>	Dark pigtoe & Critical Habitat	No Effect
<i>Pleurobema perovatum</i>	Ovate clubshell & Critical Habitat	No Effect
<i>Pleurobema plenum</i>	Rough pigtoe	No Effect
<i>Ptychobranthus greeni</i>	Triangular kidneyshell & Critical Habitat	No Effect
<i>Necturus alabamensis</i>	Black Warrior Waterdog	No Effect
<i>Etheostoma phytophilum</i>	Rush Darter	No Effect
<i>Dalea foliosa</i>	Leafy prairie-clover	No Effect
<i>Lesquerella lyrata</i>	Lyrata bladderpod	No Effect
<i>Marshallia mohrii</i>	Mohr's Barbara's buttons	No Effect
<i>Leavenworthia crassa</i>	Fleshy fruit glaucous	No Effect
<i>Sagittaria secundifolia</i>	Kral's water-plantain	No Effect
<i>Platanthera integrilabia</i>	White fringeless orchid	No Effect
<i>Thelypteris pilosa var al.</i>	Alabama streak-sorus fern	No Effect
<i>Xyris tennesseensis</i>	Tennessee yellow-eyed grass	No Effect
<i>Apios priceana</i>	Price's potato bean	No Effect

**EXPLANATION OF DETERMINATIONS:**

**Determinations and the Needed Follow-up Actions:** The determination of effects for Federally Listed Species are: 1) No Effect; 2) Is not likely to adversely affect; 3) Is likely to adversely affect. All the possible effects can and should be included within one of the above determinations. The needed follow-up actions vary depending on the type of species and the determination.

A “no effect” determination should be used when the proposed actions have no effects on the PETS species or critical habitat. No follow-up action is required for this determination.

A determination of “**is not likely to adversely affect**” should be used for discountable, insignificant or beneficial effects. If the determination of “is not likely to adversely affect”, written concurrence is required from the FWS for both proposed and listed species. *Discountable* effects are those extremely unlikely to occur. Based upon best judgment, a person would not be able to meaningfully measure, detect or evaluate insignificant effects. *Insignificant* effects relate in size of the impact and should never reach the scale where take occurs. *Beneficial* effects are positive effects without any adverse effect to the species.

A determination of “**is likely to adversely affect**” should be used if any adverse effect to a listed species may occur as a direct or indirect result of the proposed action. If the determination is “likely to adversely affect” and the species is proposed for listing, concurrence with the FWS is required. If the determination of “is likely to adversely affect” and the species is listed as threatened or endangered, formal consultation with the FWS is required by ESA section 7.

Conference is a legally required “informal consultation” with the FWS. All requests for formal consultation must be sent through the Regional Forester. If applicable, Region or Forest-wide concurrence letters from the FWS can be referenced for site-specific projects.

**Consultation Implications:** Based on the finding of “not likely to adversely affect” Indiana bat concurrence from the FWS is required.

**PREPARERS:**

Biological Evaluation Prepared by:

*/s/ Allison Cochran*  
Allison Cochran  
Biological Scientist  
Bankhead Ranger District

Biological Evaluation Reviewed and Approved by:

*/s/ Tom Counts*  
Tom Counts  
District Wildlife Biologist  
Bankhead Ranger District

Date: February 23, 2009

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