

U.S Forest Service
Bankhead Ranger District
Biological Assessment/Evaluation of Prescribed Burning Program 2007-2009

BIOLOGICAL ASSESSMENT/BIOLOGICAL EVALUATION
of
Proposed, Endangered, Threatened, and Sensitive Species
Prescribed Burning Program for 2007 - 2009
Lawrence, Franklin and Winston County, Alabama

Bankhead National Forest

Responsible Agency:
USDA Forest Service
National Forests in Alabama
William B. Bankhead Ranger District

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Summary: The William B. Bankhead National Forest is located within the northwest corner of Alabama. This national forest lies within Lawrence, Winston and Franklin counties. It is comprised of approximately 182,000 acres of forest land. The forest, which is proposed for prescribed burning varies in both cover type and age class but is primarily a mixture of mature hardwoods and pine or longleaf pine. The prescribed burning program proposed for implementation during 2007 -2009 covers approximately 15,284 acres.

Prescribed burning is utilized by the Forest Service to achieve a variety of objectives such as to improve wildlife habitat, reduce the accumulation of fuels and to manage for ecological diversity. A prescribed fire serves as a way to reintroduce fire into natural ecosystems. The Forest Health and Restoration Project, which was approved in 2003, provides for the use of prescribed fire for a variety of reasons. In addition, many of the areas proposed for prescribed burning under this evaluation are within an ecosystem restoration prescription or that of a dispersed recreation area with vegetation management of the revised Forest Land and Resource Management Plan. These prescriptions call for vegetation management to achieve recreational, wildlife, ecosystem restoration or aesthetic values.

As with any Forest Service activity, considerations of the potential impacts to environmental resources of this project were evaluated. Some of the protected species of plants and wildlife that could potentially be impacted by these activities include those plant communities which are found in upland areas, around caves and in riparian areas, as well as those which are found on rock outcrops and glades. Aquatic wildlife would not be directly affected, as water quality protective mechanisms and mitigation practices are in place for their protection. No incidental take of any federally listed species is expected or anticipated with this proposed action.

Erosion control measures to prevent, reduce or control soil erosion, will be utilized where deemed necessary by Forest Service personnel. Past efforts on the District to control erosion on fire lines have been very successful. Streamside management zones are recognized with regard to equipment limitations within close proximity to streams. Plant and animal species which are listed as endangered, threatened, or proposed as a candidate, sensitive and locally rare species will be protected by a combination of these practices.

**BIOLOGICAL EVALUATION OF PROPOSED, ENDANGERED, THREATENED
and
SENSITIVE SPECIES
for
PRESCRIBED BURNING PROGRAM
in
THE BANKHEAD NATIONAL FOREST
DURING
2007 - 2009**

National Forests in Alabama
William B. Bankhead Ranger District
Lawrence, Winston and Franklin Counties
Alabama

Introduction

A biological evaluation is a documented review of programs or activities to determine the effect on threatened, endangered, candidate or sensitive species. This Biological Evaluation (BE) addresses the effects of conducting prescribed burning and its associated activities. The project proposal is to conduct prescribed burning on multiple tracts covering a total area of approximately 15,284 acres across the Bankhead National Forest between 2007 and 2009.

All tracts and their approximate acreage proposed for prescribed burning are listed within this document and maps which depict the location of these areas is referenced as Map #1 – 19 (2007). Areas to be prescribed burned are dispersed across the entire forest area, however there are no burns planned within the Sipsey Wilderness Area. This evaluation primarily covers the practices associated with the proposed project, which consists of constructing fire lines and conducting the actual burn.

Firebreaks are natural or man made features that serve to limit the spread of a fire. A natural barrier to fire might be a creek or stream. An example of a man-made barrier would be an existing feature such as a road. A man-made barrier could also be constructed by clearing an area of vegetation in order to expose mineral soil. Constructed fire lines are typically established with heavy equipment such as a bulldozer. For prescribed burn operations, constructed fire lines are usually placed along predetermined locations to control fire behavior and spread. The establishment of these lines with heavy equipment will cause a disturbance to the soil and plant life that grow there. Sensitive habitats for plants or animals could potentially be damaged by fire line construction, if construction was done in sensitive areas. Some of the plant communities that may occur within the areas proposed for burning are either fire tolerant; habitats in which fire is expected to produce beneficial effects; or the fire is not expected to reach them. Other potentially sensitive habitats, such as riparian areas, would normally have sufficient fuel moisture to either prevent fire or reduce it to a low intensity.

Fire lines are planned in advance of construction and avoid glade and rock outcrops, as well as wetlands and riparian areas. If fire lines have to be to be constructed through sensitive areas, hand tools are used to construct the line instead of heavy equipment, thus minimizing soil and plant disturbance. Constructing fire lines by hand (hand line) involves using rakes and shovels to pull back the leaf litter and duff and removing logs and other debris in order to expose an area of mineral soil. A detailed burn plan is prepared for every site which considers all aspects of the burn operation.

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Area description

Bankhead National Forest is located in northwest Alabama and lies within Lawrence, Winston and Franklin counties. It is comprised of approximately 182,000 acres of forestland. The forest cover varies in both cover type and age class but is mostly a mixture of hardwoods and pine with areas of longleaf pine. The areas to be burned are composed of a mixture of hardwood and pine trees. Some small stands are composed primarily of planted loblolly shortleaf and longleaf pines. General tree species observed include white oak, red maple, red oak, beech, sourwood, dogwood, loblolly pine, shortleaf pine, longleaf pine, yellow poplar, water oak, elm, persimmon, hickory, sweetgum, Virginia pine, chestnut oak, black cherry, hemlock and big leaf magnolias.

Shrub and vine species commonly observed include greenbrier, Carolina buckthorn, hydrangea, viburnum, blackberry, holly, wild azalea, huckleberry, blueberry, muscadine, beautyberry, winged sumac, sassafras, witch hazel, devil's walking stick, poison ivy and Virginia creeper.

Prescribed burning has been conducted on the area for many years. Most burning is to be conducted within the dormant season, however some burns may be planned for the growing season. This is needed to allow for control of larger shrubs and small trees and to assist in providing a range of fire regimes.

The Forest Health and Restoration Project, which was approved in 2003, provides for the use of prescribed fire for a variety of reasons. Some of these include for improving wildlife habitat, ecosystem restoration and fuel reduction. In addition, most of the areas proposed for prescribed burning under this evaluation are within an ecosystem restoration prescription or that of a dispersed recreation area with vegetation management of the revised Forest Land and Resource Management Plan. These prescriptions call for vegetation management to achieve recreational, wildlife, ecosystem restoration or aesthetic values. Contained within the Bankhead National Forest is the Black Warrior Wildlife Management Area. This area of approximately 98,000 acres is cooperatively managed by the Alabama Department of Conservation and Natural Resources, Wildlife and Freshwater Fisheries Division as a public use and hunting area. Several of the planned burns will be conducted within or adjacent to the Black Warrior WMA. This is the largest public hunting area operated by the Alabama Department of Conservation and Natural Resources.

Consultation History

There has been consultation with the U.S. Fish and Wildlife Service (FWS) regarding the use of prescribed fire on the Bankhead National Forest, for many years prior to the this proposal. Over twenty one biological evaluations regarding the impact of similar activities upon threatened, endangered and sensitive species were reviewed as preparation for this evaluation. During this time period, a variety of plants and animals have been continually added to the lists of protected species.

Past consultation with the Fish and Wildlife Service has given concurrence to prescribed burning activities, as long as protective measures are in place to protect water quality for aquatic species and that terrestrial species are adequately considered. These items are given due consideration and are utilized during the planning and layout phase of the prescribed burning operations. All best management practices and Forest Service guidelines are observed that will provide protection of water quality and aquatic resources.

A review of Biological Evaluations, which were conducted for planned prescribed burns since 1994, revealed that there has been increasing concern for protection of water quality. This concern was primarily from soil erosion impacts due to fire line construction. Measures such as seeding and mulching of disturbed areas on constructed fire lines introduced during 2002 and 2003 provided very good erosion control.

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A field review has been conducted annually of fire line erosion control efforts. A partial listing of the reviewed evaluations included those prescribed burns in management compartments 4, 127, 131, 140 and 157 (dated 2/24/00); 15, 31, 69, 92, 125, 127, 129, 132, 141, and 161 (dated 2/24/98); 157, 33, 46, and 52 (dated 3/28/96); 90, 95, 140, 142, and 154 (dated 3/03/95), 21, 31, 170, 126, 130, and 152. Biological evaluations of prescribed burning projects from the years immediately prior of 2003 – 2004 and 2005-2006 were also reviewed in preparing this document. The listing above does not cover all of the evaluations reviewed but it is representative of those conducted in recent years.

Proposed Management Action

The proposed action is to conduct prescribed burning activities on the areas listed below. Refer to Map #1- 19 for the proximity location of these sites within the forest boundary. Please note that acreages are approximate and the actual burn acreage may vary slightly.

Table #1

Map No.	Burn Name	Acreage	Season	Comments
1	Brown Creek	854	Dormant	10 year burn interval
2	Brushy West	973	Dormant	Ala. A&M Research site
3	Clifty Fork	748	Dormant	
4	Dry Creek	30	Growing	Longleaf stand in WMA
5	Fall City	464	Dormant	
6	Hall	872	Dormant	Ala. A&M Research site
7	Jim Brown	1208	Dormant	10 year burn interval
8	Mile Creek	395	Growing	
9	Old Oak Grove	422	Growing	
10	Pine Torch	440	Growing	
11	Riddle	624	Growing	
12	Rock House	1263	Growing	
13	Round Mountain	296	Growing	
14	Shelton Road	1285	Dormant	Ala. A&M Research site
15	Walston Ridge	1946	Dormant	
16	Well Woman	698	Dormant	
17	Wilburn Ford	1070	Growing	
18	Wolf Pen	880	Dormant	10 year burn interval Ala. A&M Research site
19	West Fork	816	Dormant	Previously Scoped and Evaluated for 2005. Now planned for 2007.
		Total 15,284	4540 Ac. Growing Season 10744 Ac. Dormant Season	

Approximate time of typical Dormant Season Burn = December to March

Approximate time of typical Growing Season Burn = April to August

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A thorough evaluation of prescribed burning considers at least two primary components. These are the activities related to fire lines and the actual burning activity. Smoke from the burn is also evaluated for potential impacts when in the close proximity to potentially sensitive biological sites.

Review of Fire Line Construction

A fire line is utilized as a management tool in prescribed burning operations. The size of a prescribed burn is limited to allow for efficient and safe management of the burn. Fire lines are also used to exclude certain areas not to be treated as well as to clearly delineate the area to be treated. Existing natural and man made barriers (fire lines) have been utilized to the greatest extent possible, as a means of reducing the amount of constructed fire lines needed. Existing features such as streams or roads are utilized for the majority of all fire lines in order to reduce the amount of disturbance from construction. In some locations it is necessary to construct new fire lines to provide for fire containment. When needed, fire lines will be completed with a combination of resources including heavy equipment and hand tools such as fire rakes and shovels. Fire line construction is completed in advance of the burning operation.

Areas where fire lines are to be established, were evaluated for potential impacts to endangered, threatened, sensitive and locally rare species of animals, plants and their habitats. During the planning phase of the project they were initially located in a favorable location for conducting the burn and when necessary to avoid sensitive habitats. Endangered, threatened, sensitive and locally rare species will be protected due to the location of fire lines in a manner to avoid sensitive habitats, as well as utilizing natural and existing man made barriers. In other instances, fire lines will be constructed with hand tools such as rakes. Hand constructed fire lines create a very minor disturbance and are utilized in environmentally sensitive areas such as near streams. Hand line construction is conducted immediately prior to the actual burning operation. This reduces the amount of time bare soil is exposed, thus reducing erosion potential. Erosion control measures will be established to prevent, reduce or control soil erosion. Erosion control measures employed on constructed fire lines include seeding, mulching, nutrient application and minimal disturbance techniques. All constructed fire lines are equipped with water bars and turn outs to protect against erosion. Forest Service personnel will evaluate the need for additional erosion control measures with considerations made for the soil type and the percent slope of the area.

Review of Prescribed Burning Operations

A detailed prescribed burn plan is prepared for each tract. This plan includes descriptions of the treatment area, burn objectives, desired fire behavior, wind, weather and fuel moisture factors, and resource coordination requirements. The resource coordination requirements include smoke management guidelines to protect smoke sensitive areas, and protection of any sensitive resource area from fire placement. Caves are considered as a smoke sensitive resource and are fully considered when preparing burn plans and conducting every burn. As required by the revised Forest Land Resource Management Plan, primary (0.5 miles) and secondary (2.0 miles) zones were reviewed during this process. Firing is conducted only with trained and qualified personnel. Burning may be initiated along preselected areas with hand held drip torch or by use of a firing device mounted on a helicopter. Burn personnel assist with firing and checking of the established fire lines as the fire moves away from the line. Generally a backing or flanking fire technique is utilized but other approved firing techniques may be employed.

Burning of this nature will retain effective ground cover of sufficient amount to prevent soil erosion. The greatest potential for erosion is generally confined to the constructed fire lines.

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Species Evaluated

All species from the “U.S. Fish and Wildlife Service’s, Threatened and Endangered Species, Alabama’s Federally Listed Species-County Lists” were reviewed for inclusion within this evaluation. In addition, all species from the USFS Regional Forester’s Southern Region Sensitive Species List were reviewed. Each of the species, which are known to be found or have historical habitats on the Bankhead National Forest were considered in this evaluation. Due to the widespread and diverse location of the areas proposed for prescribed burning across the District, all habitats, both upland and aquatic, were initially considered.

Survey Information and Environmental Baseline for Evaluated Species

Data regarding population numbers for many of the species of concern within this evaluation do not exist. Based upon past studies, monitoring efforts and research, preferred habitats and some concept of distribution of these areas is known. Records of occurrences of these species were reviewed as part of this evaluation.

A list of the Proposed, Threatened or Endangered (T&E) species that may be considered endemic to the Bankhead National Forest (BNF) follows.

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>STATUS</u>
<i>Myotis grisescens</i>	Gray Bat	E
<i>Myotis sodalis</i>	Indiana bat	E
<i>Haliaeetus leucocephalus</i>	Bald Eagle	T
<i>Picoides borealis</i>	Red-cockaded woodpecker	E
<i>Sternotherus depressus</i>	Flattened musk turtle	T
<i>Epioblasma brevidens</i>	Cumberlandian combshell	E
<i>Epioblasma metastriata</i>	Upland combshell	E
<i>Epioblasma turgidula</i>	Turgid blossom pearly mussel	E
<i>Lampsilis altilis</i>	Fine-lined pocketbook	E
<i>Lampsilis perovalis</i>	Orange-nacre mucket	T
<i>Medionidus acutissimus</i>	Alabama moccasinshell	T
<i>Medionidus parvulus</i>	Coosa moccasinshell	E
<i>Pleurobema furvum</i>	Dark pigtoe	E
<i>Pleurobema perovatum</i>	Ovate clubshell	E
<i>Pleurobema plenum</i>	Rough pigtoe	E
<i>Ptychobranthus greeni</i>	Triangular kidneyshell	E
<i>Lampsilis orbiculata</i>	Pink mucket pearlymussel	E
<i>Dalea foliosa</i>	Leafy prairie clover	E
<i>Helianthus eggertii</i>	Eggert's sunflower	T
<i>Lesquerella lyrata</i>	Lyrate bladder-pod	T
<i>Marshallia mohrii</i>	Mohr's Barbara's Buttons	T
<i>Sagittaria secundifolia</i>	Kral's water-plantain	T
<i>Thelypteris pilosa var al.</i>	Alabama streak-sorus fern	T
<i>Xyris tennesseensis</i>	Tennessee yellow-eyed grass	E

Key to Table –

E=Endangered; T=Threatened

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Some species found on the threatened and endangered list were initially *considered* but were **excluded** from further evaluation. This was due to the fact that the area in consideration was outside of their range, the species was extirpated or required habitat was not present. A discussion of these species and the reasons why they were excluded from further consideration is included below.

Red-cockaded woodpecker. Although there is historical habitat and records of occurrence within Bankhead National Forest, there has been no record of a red-cockaded woodpecker at the Bankhead National Forest since the early to mid 1990's. Annual bird surveys have failed to locate this species. Informal conversations with Ralph Costa, of the Fish and Wildlife Service resulted in agreement that the red-cockaded woodpeckers are no longer present here. Thus, this species was excluded from further evaluation for this project.

Mussels - turgid blossom, pink mucket pearly, rough pigtoe and Cumberlandian combshell mussels. These species were historically found on stable gravel-cobble substrate in shoals in large rivers with medium to fast current velocities. They are either considered as extirpated or have never been found within the vicinity of Bankhead National Forest and thus are excluded from further consideration and evaluation. Although historical and critical habitat will be recognized, the procedures currently utilized for protection of water quality from silvicultural practices will provide protection of this habitat. Practices that have a potential to produce excessive levels of sediment have been restricted and mitigated. These species are excluded from additional analysis because they have been extirpated or were never known to exist in the Bankhead National Forest.

Leafy Prairie Clover. This species has not been found on the Bankhead National Forest and was not found during field surveys for this project. The habitat is that of a limestone cedar glade or barren. Populations of this species exist in Lawrence County on a Tennessee Valley Authority right-of-way and in Morgan County on a road right-of-way. A population was known from Franklin County, but it has not been observed since 1971. For the reasons listed above, this species was excluded from further evaluation. Any unknown and undiscovered populations of this plant would be protected from damage as all rock outcrops and glades are protected from heavy equipment during fire line construction by avoidance of these areas. Fire is typically used to manage these areas by preventing encroachment from trees, shrubs and other species that shade the glades and thus should be beneficial all glade loving herbaceous plant species.

Lyrate bladder-pod. This sporadic spring annual has not been found on the Bankhead National Forest although it is found on private land within Lawrence and Franklin Counties. It was not located during field surveys for this proposed project. The habitat is restricted to that of a limestone rock-based, calcareous soil, prairie type area. This early successional species has been found on the edges of cedar glades. Any unknown and undiscovered populations of this plant would be protected from damage as all rock outcrops and glades are protected from heavy equipment during fire line construction by avoidance of these areas. Fire is typically used to manage these areas by preventing encroachment from trees, shrubs and other species that shade the glades. For the reasons listed above, this species was excluded from further evaluation.

Tennessee yellow-eyed grass. This species has not been found on the Bankhead National Forest and was not found during field surveys for this project. For this reason this species was excluded from further evaluation. It is known to occur on rock outcrops within the Tennessee Valley portion of Franklin County. It has been found in spring meadows and along small streams. Habitat has been described as including open, sunny, wet conditions over calcareous bedrock. Any unknown and undiscovered populations of this plant would be protected from damage as all rock outcrops and glades are protected from heavy equipment during fire line construction by avoidance of these areas. Fire is typically used to manage these areas by preventing encroachment from trees, shrubs and other species that shade the glades

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Evaluation of Threatened and Endangered Species

A list of the Proposed, Threatened or Endangered species that may be considered endemic to the Bankhead National Forest follows. All currently listed threatened, endangered and sensitive species were considered during this portion of the evaluation. Some of the species are not known to occur on the Bankhead National Forest at the present time but potential habitat was assessed for effects. The evaluation of the species considered that may be affected is noted in the following section.

In compliance with a court order the U.S. Fish and Wildlife Service has recently assessed the best data available to evaluate critical habitat for 11 species of mussels. The final rule to designate critical habitat was published in the Federal Register on July 1, 2004 (50 CFR Part 17) and was effective as of August 2, 2004. Those five species with designated critical habitat on Bankhead National Forest include the orange-nacre mucket (*Lampsilis perovalis*), Alabama moccasinshell (*Medionidus acutissimus*), ovate clubshell (*Pleurobema perovatum*), dark pigtoe (*Pleurobema furvum*), triangular kidneyshell (*Ptychobranhus greenii*). Critical habitat is a term used in the Endangered Species Act to refer to a specific geographic area that is essential for the conservation of a threatened or endangered species and may require special management or protection. Federal agencies such as the Forest Service are required to consult with the Fish and Wildlife Service to ensure that their actions do not jeopardize the continued existence of these species or destroy or adversely modify critical habitat. This designation also serves to enhance awareness of the importance of the habitat and the need for special management considerations.

Species considered and evaluated

The following seven species of mussels were considered and evaluated because their habitat may be located within a stream which is within the area of a prescribed burn unit.

- Fine-lined Pocketbook (*Lampsilis altilis*)
- Orange-nacre mucket mussel (*Lampsilis perovalis*)
- Alabama Moccasinshell (*Medionidus acutissimus*)
- Coosa Moccasinshell (*Medionidus parvulus*)
- Dark Pigtoe (*Pleurobema furvum*)
- Ovate Clubshell (*Pleurobema perovatum*)
- Triangular Kidneyshell (*Ptychobranhus greeni*)

**Fine-lined pocketbook (*Lampsilis altilis*) Conrad
Environmental Baseline – Fine-lined pocketbook**

The fine-lined pocketbook was federally listed as threatened in 1993. The species historically occurred in the Alabama, Tombigbee, Black Warrior, Cahaba, Tallapoosa, Coosa River systems, and their tributaries. Currently, this species is limited to small streams above the fall line within the Cahaba, Coosa, and Tallapoosa River Basins (USFWS 2003). It is not currently known to exist within Bankhead National Forest although it historically had habitat in this area. This species is included in this analysis due to its having historical habitat within Bankhead National Forest and its being proposed for critical habitat designation. Critical habitat was proposed for 12 watersheds including portions of the extant populations and historical habitats on or near Bankhead National Forest but was approved for only five. The critical habitat designation was not given to this species in habitats found in Bankhead National Forest.

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Overview of fine-lined pocketbook mussel historical and potential habitat within five miles of the Bankhead National Forest.

River Basin	Watersheds	Forest	Counties	Status	Viability Risk ²		
					L	M	H
Black Warrior	Lower Brushy	Bankhead	Winston	Historical		N	
	L. Sipsey Fork		Winston	Historical			N
	Upper Brushy		Winston	Historical		F	
	U. Sipsey Fork		Winston	Historical		F	

¹Viability risks: L = low, M = moderate, H = high, N = minimal FS influence, F = some FS influence

This species is found in moderate to swift currents over stable sand, gravel, and cobble substrates in large rivers to small creeks. The decline and extirpation of most populations of fine-lined pocketbook mussels may be attributed to habitat modification, sedimentation, eutrophication, and other forms of water quality degradation. Passage of host fish may also be a factor. They are not known to exist on the Bankhead National Forest. Although historical habitat will be recognized, the procedures currently utilized for protection of water quality from silvicultural practices will provide protection of this habitat. Resource protection measures and practices that reduce the likelihood of sediment entering aquatic habitats will be practiced to protect potential habitat for this species.

Direct, Indirect, and Cumulative Effects – Fine-lined Pocketbook

For populations of fine-lined pocketbook mussels on or near Bankhead National Forest, potential management influences include any activity that could accelerate erosion or deposition, increase sedimentation or turbidity, alter water flow or chemistry, favor the spread of invasive species, or block host fish passage.

Siltation and turbidity may affect fine-lined pocketbook by altering the rocky interstitial spaces where they live and also by reducing foraging and reproductive effectiveness. While there is a background level of natural silt movement within the streams, any induced action that causes soil erosion produces unnatural amounts that may cause resource damage. Road construction and other projects which disturb the soil associated with right of ways are widely recognized as major sources of sediment input to streams. Erosion control measures as described in the “Proposed Management Action” section will prevent excessive soil erosion. These have been utilized and evaluated to provide adequate erosion control measures on constructed fire lines. Equipment associated with the burns will enter streams. Direct and indirect impacts are not anticipated.

A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. The analysis includes all actions regardless of who undertakes the actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time. Cumulative watershed effects from off-forest sources are of concern given the interspersed private in-holdings on some sections of proposed critical habitat as the Forest Service has no authority on private land activities. Continued habitat and watershed protection, monitoring, and restoration will be the primary recovery objectives on Forest lands as is evidenced by this project.

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Determination of Effect – Fine-lined Pocketbook

The determination is “no effect” for historical habitat of the fine-lined pocketbook mussel. Project resource protections as described will be utilized to protect water quality within streams and tributaries, thus protecting the habitat for this species. It is therefore my determination that the practices and management actions necessary to carry out this project will have “no effect” on the fine-lined pocketbook.

Orange-nacre mucket (*Lampsilis perovalis*)

Environmental Baseline – Orange-nacre mucket

The orange-nacre mucket was federally listed as threatened in 1993 (USFWS 1993). The species historically occurred in the mainstem and tributaries of the Alabama, Tombigbee, Black Warrior, and Cahaba, River systems in Alabama, Mississippi, and Georgia. Currently, the mussel may be extirpated from the mainstem Tombigbee, Black Warrior, and Alabama Rivers; however it may still be found within several river basins including the Black Warrior and Cahaba Rivers (USFWS 2003). Critical habitat was proposed for 15 watersheds in Alabama and Mississippi (USFWS 2003). Portions of the designated critical habitat are located in the Sipsey Fork largely on the Bankhead National Forest. Populations and potential habitats on or near Bankhead National Forest are displayed in the table below.

Overview of the orange-nacre mucket historical, potential, and proposed critical habitat within five miles of the Bankhead National Forest.

River Basin	Watersheds	Forest	Counties	Status	Viability Risk ¹		
					L	M	H
Black Warrior	Clear	Bankhead	Winston	unlikely			N
	Lower Brushy			unknown		N	
	L. Sipsey Fork			24 mi occupied C Hab			N
	U. Sipsey Fork			27 mi occupied C.Hab		F	

¹Viability risks: L = low, M = moderate, H = high, N = minimal FS influence, F = some FS influence

This species inhabits streams and small rivers among stable sand, gravel, or cobble substrates in moderate to swift currents. Larval glochidia are released as superconglutinates (Haag et al. 1995) within the months of March through June (Hartfield and Butler 1997). Redeye bass, spotted bass, and largemouth bass have been identified as suitable fish hosts for the glochidia (Haag and Warren 1997). Freshwater mussels are filter feeders taking organic detritus, diatoms, phytoplankton, and zooplankton from the water column. As with many other freshwater mussels, orange-nacre muckets require clean gravel riffles and are especially susceptible to the threat of stream degradation resulting from low dissolved oxygen levels or high chlorine concentrations in waterways. Additionally, this species does not survive in impoundments and reservoirs.

The decline and extirpation of most populations of orange-nacre mucket mussels may be attributed to habitat modification, sedimentation, eutrophication, and other forms of water quality degradation. Passage of host fish may also be a factor. The 7 known or suspected extant populations of orange-nacre muckets probably inhabit only a portion of the suitable habitat for this species within the Alabama National Forests. Recent drought conditions and existing barriers to fish passage may limit the extent of populations within the upper portions of most watersheds. Currently, only two known or suspected populations associated with the Alabama National Forests are considered moderately secure based upon analysis of potential watershed conditions that could place the species at risk. The remaining 5 watershed scale populations rank as high risk but have limited opportunities for Forest Service involvement. One population (Upper Sipsey Fork) is potentially at risk of population decline due to reduced base flows and a downstream reservoir possibly reducing the ability of the species to re-colonize the upper watershed.

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Direct, Indirect, and Cumulative Effects – Orange-nacre mucket

Orange-nacre muckets are fairly widely distributed across the Upper Sipsey, including Thompson, Flannagin and Borden creeks in Lawrence county. Their populations in the upper Brushy creek watershed are not well known. They are also a species that can inhabit long reaches extending from the mainstem to tributary headwaters. Consequently, the potential effects of Forest Service management activities are much broader than for other mussel species that do not inhabit such a wide range of habitat. For populations of orange-nacre mucket mussels and their proposed critical habitat on or near National Forests, potential management influences include any activity that could accelerate erosion or deposition, increase sedimentation or turbidity, alter water flow or chemistry, favor the spread of invasive species, or block host fish passage.

Siltation and turbidity may affect orange-nacre muckets by altering the rocky interstitial spaces where they live and also by reducing foraging and reproductive effectiveness. This is addressed by employing mitigating measures to limit and minimize the transfer of sediment that potentially enters into aquatic sources. Erosion control measures as described in the “Proposed Management Action” section will prevent excessive soil erosion. The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. Thus, direct and indirect impacts are not anticipated.

A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. The analysis includes all actions regardless of who undertakes the actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time. Cumulative watershed effects are of particular concern given the interspersed private in-holdings on some sections of proposed critical habitat. The management of private lands is not governed or regulated by the Forest Service. Continued habitat and watershed protection, monitoring, and restoration will be the primary recovery objectives. Cumulative effects of all of the burns during a season as reduced as the mitigation measures as described, for soil erosion will be carried out on all burn sites.

Determination of Effect – Orange-nacre mucket

The determination is “no effect” for orange-nacre mucket mussel. The rationale for this decision rests upon the fact there is no opportunity for the project to impact the habitat for this species. Project resource protections as described will protect water quality within streams and tributaries, thus protecting the habitat for this species. Thus, given the protection afforded by the erosion control measures as described and by the overall water quality protection mechanisms of the Forest Land and Resource Management Plan, orange-nacre muckets and their proposed critical habitat will not be impacted. It is therefore my determination that the practices and management actions necessary to carry out this project have “no effect” on the orange nacre mucket mussel and do not jeopardize the continued existence of the species or destroy or adversely modify critical habitat

**Alabama moccasinshell (*Medionidus acutissimus*) Lea
Environmental Baseline – Alabama moccasinshell**

The Alabama moccasinshell was federally listed as threatened in 1993 (USFWS 1993). The species historically occurred in the Alabama, Tombigbee, Black Warrior, Cahaba, Coosa River systems, and their tributaries in Alabama, Mississippi, and Georgia. The species appears to have declined or disappeared from the mainstem rivers of all basins but continues to survive in many tributary streams (USFWS 2003). Highest densities have been observed within the Sipsey Fork tributaries on the Bankhead National Forest (Warren and Haag 1994). Critical habitat has been designated for 16 watersheds including portions within the Sipsey Fork largely on the Bankhead National Forest (USFWS 2003). Current and historical habitats on or near Bankhead National Forest are displayed in the table below.

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Overview of Alabama moccasinshell mussel occurrences and historical, potential, and critical habitat within five miles of the Bankhead National Forest.

River Basin	Watersh	Miles		Forest	Counties	Status	Viability Risk ¹		
							L	M	H
Black Warrior	Lower Brushy	13		Bankhead	Winston	Occupied		N	
	Upper Brushy	40			Winston	Occupied		F	
	L. Sipse Fork	24			Winston	Occupied C.Hab			N
	U. Sipse Fork	27			Winston	Occupied C.Hab		F	
total		104							

¹Viability risks: L = low, M = moderate, H = high, N = minimal FS influence, F = some FS influence

This species is found in streams and small rivers along moderate to fast flowing shoals. It inhabits the interstices of gravel and cobble substrates, remaining completely embedded in the stream bottom most of the year. The blackspotted topminnow (*Fundulus olivaceus*), Tuskaloosa darter (*Etheostoma douglasi*), redbfin darter (*E. whipplei*), blackbanded darter (*Percina nigrofaciata*), naked sand darter (*Ammocrypta beani*), southern sand darter (*A. Meridiana*), Johnny darter (*E. nigrum*), speckled darter (*E. stigmaeum*), saddleback darter (*Percina vigil*), and logperch (*P. caprodes*) have been identified as suitable fish hosts for the glochidia (Haag and Warren, 1997, 2001). Freshwater mussels are filter feeders taking organic detritus, diatoms, phytoplankton, and zooplankton from the water column. As with many other freshwater mussels, Alabama moccasinshells require clean gravel riffles and are especially susceptible to the threat of stream degradation resulting from low dissolved oxygen levels or high chlorine concentrations in waterways. Additionally, this species does not survive in impoundments and reservoirs. Other factors that can negatively impact freshwater mussels include contamination of waterways with pesticides, heavy metals, and other substances and the introduction of non-indigenous mollusks, such as the Asian clam and zebra mussel. The primary constituent elements of critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive nonnative species (USFWS 2003).

The decline and extirpation of most populations of Alabama moccasinshell may be attributed to habitat modification, sedimentation, eutrophication, and other forms of water quality degradation. Passage of host fish may also be a factor. Recent drought conditions and existing barriers to fish passage may limit populations within the upper portions of these watersheds where this species exists. One population (Lower Sipse Fork) is potentially at high risk of population decline due to reduced base flows and a downstream reservoir possibly limiting the ability of the species to re-colonize the upper watershed.

Direct, Indirect, and Cumulative Effects – Alabama moccasinshell

Alabama moccasinshells are fairly widely distributed across the Sipsey and Brushy drainages within Bankhead National Forest. They are also a species that can inhabit long reaches extending from the mainstem to tributary headwaters. For populations of Alabama moccasinshell mussels and their critical habitat, potential management influences include any activity that could accelerate erosion or deposition, increase sedimentation or turbidity, alter water flow or water chemistry, or block host fish passage.

Siltation and turbidity may affect Alabama moccasinshell mussels by altering the rocky interstitial spaces where they live and also by reducing foraging and reproductive effectiveness. This is addressed by employing mitigating measures to limit and minimize the transfer of sediment that potentially enters into aquatic sources. Erosion control measures as described in the “Proposed Management Action” section will prevent excessive soil erosion. The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. Thus, given the protection afforded by the erosion control measures as described and by the overall water quality protection mechanisms of the Forest Land and Resource Management Plan, direct and indirect impacts are not anticipated.

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A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. The analysis includes all actions regardless of who undertakes them. Cumulative effects can result from individually minor but collectively significant actions taking place over time. Cumulative watershed effects are of particular concern given the interspersed of private in-holdings on some sections of critical habitat. The management of private lands is not governed or regulated by the Forest Service. Continued habitat and watershed protection, monitoring, and restoration will be the primary recovery objectives for the Forest Service.

The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. If the practices contained herein are implemented by utilizing standards of Forest Service procedures; the direct, indirect and cumulative effects are not anticipated.

Determination of Effect – Alabama moccasinshell

The determination is “no effect” for Alabama moccasinshell mussels. The rationale for this decision rests upon the fact there is no opportunity for the project to impact the habitat for this species. Project resource protections and project mitigations as described will be utilized to protect water quality within streams and tributaries, thus protecting the habitat for this species.

It is therefore my determination that the practices and management actions necessary to carry out this project have “no effect” on Alabama moccasinshell mussels and do not jeopardize the continued existence of this species or destroy or adversely modify critical habitat.

**Coosa moccasinshell (*Medionidus parvulus*) Lea
Environmental Baseline – Coosa moccasinshell**

The Coosa moccasinshell was federally listed as endangered in 1993 (USFWS 1993). The species historically occurred in the Cahaba, Sipsey Fork of the Black Warrior, Coosa River systems, and their tributaries in Alabama, Georgia, and Tennessee. Currently, the species may be extirpated from the Cahaba and Black Warrior River basins. Since listing, the species has only been documented in the Conasauga River of the upper Coosa River Basin (USFWS 2003). Critical habitat has been designated on 9 watersheds of Alabama, Georgia, and Tennessee. This critical habitat does not include any portions of the streams within Bankhead National Forest (USFWS 2003). This species is included within this analysis primarily due to its status as having *historical habitat* within the Black Warrior basin and that it is a high profile species with critical habitat designation in other areas. Historical, potential, and critical habitats on or near National Forests are displayed in the table below.

Overview of Coosa moccasinshell historical habitat within five miles of the Bankhead National Forest.

River Basin	Watersheds	Miles		Forest	Counties	Status	Viability Risk ¹		
							L	M	H
Black Warrior	L. Sipsey Fork	24		Bankhead	Winston	historical			N
	U. Sipsey Fork	27			Lawrence	historical		F	
Total		119							
¹ Viability risks: L = low, M = moderate, H = high, N = minimal FS influence, F = some FS influence									

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This species inhabits the interstices of gravel and cobble in flowing shoals of streams and small rivers. The Coosa moccasinshell is usually completely buried in the stream bottom (USFWS 2003). Gravid females are thought to migrate to the surface during spring for release of their larval glochidia. They are known to utilize darters as glochidial hosts and other species may also be used (USFWS 2003). Freshwater mussels are filter feeders taking organic detritus, diatoms, phytoplankton, and zooplankton from the water column. The Coosa moccasinshell requires clean gravel riffles and are especially susceptible to stream degradation resulting from low dissolved oxygen levels or high chlorine concentrations in waterways. Additionally, this species does not survive in impoundments and reservoirs. Other factors that can negatively impact freshwater mussels include contamination of waterways with pesticides, heavy metals and other substances and the introduction of non-indigenous mollusks, such as the Asian clam and zebra mussel. The primary constituent elements of critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive nonnative species (USFWS 2003).

The decline and extirpation of most populations of Coosa moccasinshells may be attributed to habitat modification, sedimentation, eutrophication, and other forms of water quality degradation. Passage of host fish may also be a factor. The five known or suspected extant populations of Coosa moccasinshell mussels probably inhabit only a small fraction of the suitable habitat remaining for this species within the Alabama National Forests and **none** is known from Bankhead National Forest.

Direct, Indirect, and Cumulative Effects – Coosa moccasinshell

For historical populations of Coosa moccasinshell mussels on or near National Forests, potential management influences include any activity that could accelerate erosion or deposition, increase sedimentation or turbidity, alter water flow or chemistry, favor the spread of invasive species, or block host fish passage.

Siltation and turbidity may affect Coosa moccasinshell mussels by altering the rocky interstitial spaces where they live and also by reducing foraging and reproductive effectiveness. This is addressed by employing mitigating measures to limit and minimize the transfer of sediment that potentially enters into aquatic sources. Erosion control measures as described in the “Proposed Management Action” section will prevent excessive soil erosion. The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. Thus, given the protection afforded by the erosion control measures as described and by the overall water quality protection mechanisms of the Forest Land and Resource Management Plan, direct and indirect impacts are not anticipated.

A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. The analysis includes all actions regardless of who undertakes the actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time. Cumulative watershed effects are of particular concern given the interspersed private in-holdings on some sections of critical habitat. The management of private lands is not governed or regulated by the Forest Service. Continued habitat and watershed protection, monitoring, and restoration will be the primary recovery objectives for the Forest Service.

The exercise of project mitigations and best management practices to prevent, reduce and avoid soil erosion, will provide protection of aquatic resources in the Bankhead National Forest. If the practices contained herein are implemented by utilizing standards of Forest Service procedures; the direct, indirect and cumulative effects will be non-existent.

Determination of Effect – Coosa moccasinshell

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The determination is “no effect” for historical habitat for Coosa moccasinshell mussels. The rationale for this decision rests upon the fact there is no opportunity for the project to impact the habitat for this species. Project resource protections as described will be utilized to protect water quality within streams and tributaries, thus protecting the habitat for this species. Thus, given the protection mechanisms as described, Coosa moccasinshells and their critical habitat will not be impacted. It is therefore my determination that the practices and management actions necessary to carry out this project have “no effect on Coosa moccasinshell mussels”.

Dark pigtoe (*Pleuorbema furvum*)

Environmental Baseline – Dark pigtoe

The dark pigtoe was federally listed as endangered in 1993 (USFWS 1993). The species historically was restricted to the Black Warrior River basin above the fall line (USFWS 2003). Since listing, it has been confirmed in the Sipsey Fork and its tributaries including Caney creek and tributaries of upper Brushy such as Brown, Capsey and Rush creeks (USFWS 2003). Highest population densities have also been recorded in these areas (Warren and Haag 1994). Critical habitat has been designated including areas within the Sipsey Fork, largely on the Bankhead National Forest (USFWS 2003).

Overview of known or suspected dark pigtoe mussel historical, potential, and critical habitat within Five miles of the Bankhead National Forest.

This	River Basin	Watersheds	Forest	Counties	Population status	Viability Risk ¹		
						L	M	H
	Black Warrior	Clear	Bankhead	Winston	unlikely			N
		Lower Brushy		Winston	present		N	
		L. Sipsey Fork		Winston	Occupied C.Hab			N
		Upper Brushy		Winston	present		F	
		U. Sipsey Fork		Winston	present		F	

¹Viability risks: L = low, M = moderate, H = high, N = minimal FS influence, F = some FS influence

species is found in sand, gravel, and cobble shoals and runs in small rivers and large streams. This species is gravid in June and releases glochidia in peach to pink colored conglutinates (Haag and Warren 1997). Fish hosts have been identified as the largescale stoneroller (*Campostoma oligolepis*), Alabama shiner, blacktail shiner, creek chub (*Semotilus atromaculatus*), and blackspotted topminnow (Haag and Warren 1997). Freshwater mussels are filter feeders taking organic detritus, diatoms, phytoplankton, and zooplankton from the water column. The decline and extirpation of most populations of dark pigtoe mussels may be attributed to habitat modification, sedimentation, eutrophication, and other forms of water quality degradation. Mussels such as the dark pigtoe require clean gravel riffles and are especially susceptible to stream degradation resulting from low dissolved oxygen levels or high chlorine concentrations in waterways. This species does not survive in impoundments and reservoirs. Other factors that can negatively impact freshwater mussels include contamination of waterways with pesticides, heavy metals, and other substances and the introduction of non-indigenous mollusks, such as the Asian clam and zebra mussel. The primary constituent elements of critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive nonnative species (USFWS 2003).

Direct, Indirect, and Cumulative Effects – Dark Pigtoe

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For populations of dark pigtoe mussels and their critical habitat on or near National Forests, potential management influences include any activity that could accelerate erosion or deposition, increase sedimentation or turbidity, alter water flow or chemistry, favor the spread of invasive species, or block host fish passage.

Siltation may affect dark pigtoe mussels by altering the rocky interstitial spaces where they live and also by reducing foraging and reproductive effectiveness. This is addressed by employing mitigating measures to limit and minimize the transfer of sediment that potentially enters into aquatic habitats where they live. Erosion control measures as described in the "Proposed Management Action" section will prevent excessive soil erosion. The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. Given the protection afforded by the erosion control measures as described and by the overall water quality protection mechanisms of the Forest Land and Resource Management Plan, direct and indirect impacts are not anticipated.

Cumulative watershed effects are of particular concern given the interspersed private in-holdings on some sections of critical habitat. The management of private lands is not governed or regulated by the Forest Service. Continued habitat and watershed protection, monitoring, and restoration will be the primary recovery objectives for the Forest Service. Cumulative effects for the total of all of the burns during a season are minimized as the mitigation measures for soil erosion will be carried out as needed on all burn sites.

Dormant season burns are generally carried out between the months of December and April. Thus, there would not be an excessive area within any one watershed that was burned during a short period of time. The growing season burns that are planned are generally small in size and would not be concentrated within any one area. The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. If the practices contained herein are implemented by utilizing standards of Forest Service procedures; the direct, indirect and cumulative effects will be non-existent.

Determination of Effect – Dark Pigtoe

The determination is "no effect" for historical habitat for dark pigtoe mussel. The rationale for this decision rests upon the fact there is no opportunity for the project to impact the habitat for this species. Project resource protections as described will be utilized to protect water quality within streams and tributaries, thus protecting the habitat for this species.

This species and their critical habitat will not be impacted. It is therefore my determination that the practices and management actions necessary to carry out this project have "no effect" on dark pigtoe mussels and do not jeopardize the continued existence of this species or destroy or adversely modify critical habitat.

Ovate clubshell (*Pleurobema perovatum*) Lea Environmental Baseline – Ovate clubshell

The ovate clubshell was federally listed as endangered in 1993 (USFWS 1993). The species historically occurred in the Tombigbee, Black Warrior, Alabama, Cahaba, Tallapoosa and Coosa Rivers, and their tributaries in Mississippi, Alabama, and Georgia. Apparently, the species is extirpated from the Black Warrior (USFWS 2003). Critical habitat has been designated for 20 watersheds in Alabama, Mississippi, Georgia, and Tennessee (USFWS 2003). Portions of critical habitat are within Sipsey Fork largely on the Bankhead National Forest. The species is not currently known to exist within Bankhead National Forest although it historically had habitat in this area.

Overview of known or suspected ovate clubshell mussel historical, potential and critical habitat within five miles of the Bankhead National Forest.

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River Basin	Watersheds	Miles	Forest	Counties	Status	Viability Risk ²		
						L	M	H
Black Warrior	Lower Brushy		Bankhead	Winston	extirpated?			
	Upper Brushy				extirpated?		F	
	U. Sipsey Fork				unoccupied C.Hab		F	
Total		80						

¹Viability risks: L = low, M = moderate, H = high, N = minimal FS influence, F = some FS influence

This species utilizes habitat consisting of sand and gravel shoals and runs in large streams and small rivers. Gravid females are observed from June through July and glochidia are released as well formed white conglutinates (USFWS 2003). Host fish are unknown for this species. Freshwater mussels are filter feeders taking organic detritus, diatoms, phytoplankton, and zooplankton from the water column. The ovate clubshell utilizes stable sediments and requires clean gravel riffles and are especially susceptible to stream degradation resulting from low dissolved oxygen levels or high chlorine concentrations in waterways. Additionally, this

species does not survive in impoundments and reservoirs. Other factors that can negatively impact freshwater mussels include contamination of waterways with pesticides, heavy metals, and other substances and the introduction of non-indigenous mollusks, such as the Asian clam and zebra mussel (*Dreissena polymorpha*). The primary constituent elements of critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive nonnative species (USFWS 2003). The decline and extirpation of most populations of ovate clubshells may be attributed to habitat modification, sedimentation, eutrophication, and other forms of water quality degradation. Passage of host fish may also be a factor. The known or suspected extant populations of ovate clubshell mussels probably inhabit only a small fraction of the suitable habitat remaining for this species within the National Forests in Alabama and **none** is known from Bankhead National Forest. Recent drought conditions and existing barriers to fish passage, such as the presence of reservoirs, may limit populations within the upper portions of these watersheds.

Direct, Indirect, and Cumulative Effects – Ovate Clubshell

For historical populations of the ovate clubshell mussel and their critical habitat on or near National Forests, potential management influences include any activity that could accelerate erosion or deposition, increase sedimentation or turbidity, alter water flow or chemistry, favor the spread of invasive species, or block host fish passage.

Siltation and turbidity may affect ovate clubshell mussels by altering the rocky interstitial spaces where they live and also by reducing foraging and reproductive effectiveness. This is addressed by employing mitigating measures to avoid, limit and minimize the transfer of sediment that potentially enters into aquatic sources. Erosion control measures as described in the “Proposed Management Action” section will prevent excessive soil erosion. The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. Given the protection afforded by the erosion control measures as described and by the overall water quality protection mechanisms of the Forest Land and Resource Management Plan, direct and indirect impacts are not anticipated.

A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. The analysis includes all actions regardless of who undertakes the actions.

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Cumulative effects can result from individually minor but collectively significant actions taking place over time. Cumulative watershed effects are of particular concern given the interspersed nature of private in-holdings on some sections of critical habitat. The management of private lands is not governed or regulated by the Forest Service. Cumulative effects for the total of all of the burns during a season are minimized as the mitigation measures for soil erosion will be carried out as needed on all burn sites. Burns are generally carried out between the months of December and April. Thus, there would not be an excessive area within any one watershed that was burned during a short period of time.

The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. If the practices contained herein are implemented by utilizing standards of Forest Service procedures; the direct, indirect and cumulative effects will be non-existent.

Determination of Effect – Ovate Clubshell

The determination is “no effect” for the ovate clubshell mussel. The rationale for this decision rests upon the fact there is no opportunity for the project to impact the habitat for this species. Project resource protections as described will be utilized to protect water quality within streams and tributaries, thus protecting the habitat for this species. Project resource protections as described will be utilized to protect water quality within streams and tributaries, thus protecting the habitat for this species.

Ovate clubshell mussels and their critical habitat will not be impacted. It is therefore my determination that the practices and management actions necessary to carry out this project have “no effect” on ovate clubshell mussels and do not jeopardize the continued existence of the species or destroy or adversely modify critical habitat.

Triangular kidneyshell (*Ptychobranthus greeni*) Conrad

Environmental Baseline -- Triangular kidneyshell

The triangular kidneyshell was federally listed as endangered in 1993 (USFWS 1993). The species historically occurred in the Black Warrior, Cahaba, Alabama, and Coosa River systems, and their tributaries in Alabama, Georgia, and Tennessee. The species may be extirpated from the Alabama River and may no longer inhabit the mainstems of the Black Warrior and Coosa Rivers (USFWS 2003). Critical habitat has been designated for 13 watersheds in Alabama, Georgia, and Tennessee (USFWS 2003). Portions of critical habitat are within the Sipsey Fork largely on the Bankhead National Forest. Historical, potential, and critical habitats on or near National Forests are displayed in the table below.

Overview of known or suspected triangular kidneyshell mussel historical, potential, and critical habitat within five miles of the Bankhead National Forest.

River Basin	Watersheds	Miles	Forest	Counties	Population Status	Viability Risk ¹		
						L	M	H
Black Warrior	L. Sipsey Fork		Bankhead	Winston	Occupied C.Hab			N
	U. Sipsey Fork			Lawrence	Occupied C.Hab		F	
	Upper Brushy			Winston	present		F	
Total		91						

¹Viability risks: L = low, M = moderate, H = high, N = minimal FS influence, F = some FS influence

This species is found in areas with rapid currents over shoals and riffles in large streams and small rivers. Larval glochidia are released from March through April as conglutinates that mimic dipteran larvae (Hartfield and

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Hartfield 1996) or fish eggs (Haag and Warren 1997) and serve to attract potential host fish. The Warrior darter (*Etheostoma bellator*), Tuscaloosa darter, blackbanded darter, and logperch have been identified as suitable fish hosts for the glochidia (Haag and Warren 1997). Freshwater mussels are filter feeders taking organic detritus, diatoms, phytoplankton, and zooplankton from the water column. This species requires clean gravel riffles and are especially susceptible to stream degradation resulting from low dissolved oxygen levels or high chlorine concentrations in waterways. As with many other freshwater mussels, the triangular kidneyshell does not survive impoundments and reservoirs. Other factors that can negatively impact freshwater mussels include contamination of waterways with pesticides, heavy metals, and other substances and the introduction of nonindigenous mollusks, such as the Asian clam and zebra mussel. The primary constituent elements of critical habitat include: stable channels, appropriate flows, necessary water quality, clean substrates, available fish hosts, and lack of competitive nonnative species (USFWS 2003).

The decline and extirpation of most populations of triangular kidneyshell may be attributed to habitat modification, sedimentation, eutrophication, and other forms of water quality degradation. Passage of host fish may also be a factor. The 7 known or suspected extant populations of triangular kidneyshell probably inhabit less than half of the suitable habitat for this species within the National Forests in Alabama. Recent drought conditions and existing barriers to fish passage may further limit populations within the upper portions of these watersheds. Currently, 2 of 7 known or suspected populations associated with the National Forests in Alabama are considered at high risk based upon analysis of potential watershed conditions.

Direct, Indirect, and Cumulative Effects – Triangular kidneyshell

Triangular kidneyshells are fairly widely distributed across Sipsey Fork and Brushy Creek of the Bankhead National Forest. They are also a species that can inhabit long reaches extending from the mainstem to tributary headwaters. For populations of triangular kidneyshell mussels and their critical habitat on or near National Forests, potential management influences include any activity that could accelerate erosion or deposition, increase sedimentation or turbidity, alter water flow or chemistry, favor the spread of invasive species, or block host fish passage.

Indirect effects such as water quality degradation should be considered. Excessive siltation and turbidity, which are caused by soil erosion may affect triangular kidneyshells by altering the rocky interstitial spaces where they live and also by reducing foraging and reproductive effectiveness. The streams where this species currently lives have a naturally occurring level of siltation and turbidity following significant precipitation events. The practices that could potentially affect this species would be those which disturb the soil and potentially result in excessive levels of soil loss. Although road construction and other projects associated with right of ways of a similar nature are widely recognized as major sources of sediment input to streams, this project is not expected to result in excessive soil disturbance. This is addressed by employing mitigating measures to avoid, limit and minimize the transfer of sediment that potentially enters into aquatic sources. Erosion control measures as described in the “Proposed Management Action” section will prevent excessive soil erosion. The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. Given the protection afforded by the erosion control measures as described and by the overall water quality protection mechanisms of the Forest Land and Resource Management Plan, direct and indirect physical damage would be prevented to this species and its habitat.

A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. The analysis includes all actions regardless of who undertakes the actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time.

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Cumulative watershed effects from off-forest sources are of concern given the interspersed nature of private in-holdings on some sections of critical habitat as the Forest Service has no authority on private land activities. Cumulative effects for the total of all of the burns during a season are minimized as the mitigation measures for soil erosion will be carried out as needed on all burn sites. Burns are generally carried out between the months of December and April. Thus, there would not be an excessive area within any one watershed that was burned during a short period of time.

Determination of Effect – Triangular Kidneyshell

The determination is “no effect” for triangular kidneyshell mussels. Project resource protections as described will be utilized to protect water quality within streams and tributaries, thus protecting the habitat for this species. Thus, given the protection afforded project protection mechanisms, triangular kidneyshells and their critical habitat should be protected on the National Forest lands. It is therefore my determination that the practices and management actions necessary to carry out the project have “no effect” on the triangular kidneyshell mussel and do not jeopardize the continued existence of the species or destroy or adversely modify critical habitat.

Bald eagle (*Haliaeetus leucocephalus*)

Environmental Baseline – Bald eagle

The bald eagle has been observed around portions of Bankhead National Forest that border the Lewis Smith Lake. In 2005 two nesting platforms were monitored and investigated by Forest Service and the Alabama department of Conservation and Natural Resources. The Non-Game Wildlife Biologist with the Alabama Department of Conservation and Natural Resources checked the sites from the air. It was his opinion that the one of the platforms was an unsuccessful nest although eggs were never observed.

Direct and Indirect effects

There is potential habitat across the entire lake waterfront. The only known sites to consider for habitat are the nesting platforms. The table below indicates the burns and their relation to known eagle nests. Since none of the nesting platforms are within a burn site, there can be no direct impacts. Indirect impacts to the sites might include downwind smoke. Although this is not expected to be excessive, it should be considered as a factor of concern if a bird was sitting on eggs or had young in the nest. These birds are mobile and could temporarily leave an area if desired unless confined to the nest due to eggs or young. Many birds of prey are documented to utilize burned areas immediately following a fire. This would not be detrimental if the smoke is not excessive. Nesting sites will be monitored as noted in Table #2.

Cumulative effects - This project will not have a cumulative impact any known or potential habitat for the bald eagle as it will not have an effect upon existing or potential habitat for this species. Ongoing development of Smith Lake for residential uses is continuing to place a greater importance of Forest Service lands to eagles along this area. Monitoring of the existing nests is ongoing by the Forest Service and the Alabama Department of Conservation and Natural Resources.

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Table #2

Burn Name

Distance & Direction

Comments/Actions

Burn Name	Distance & Direction	Comments/Actions
Falls City	4 miles South of nest sites	<p><u>South Wind - Only</u></p> <p>Check nests prior to burn</p> <ul style="list-style-type: none"> • If no birds present: burn within conditions allowed by burn plan. • If birds are present: Burn with good or better dispersion conditions to prevent excessive smoke at nest sites. <p><u>Other wind conditions</u></p> <ul style="list-style-type: none"> • No Risk - No evaluation needed
Old Oak Grove	0.9 - 1 mile South of nest sites	<p><u>South Wind - Only</u></p> <p>Check nests prior to burn</p> <ul style="list-style-type: none"> • If no birds present: burn within conditions allowed by burn plan. • If birds are present: Burn with good or better dispersion conditions to prevent excessive smoke at nests. <p><u>Other wind conditions</u></p> <ul style="list-style-type: none"> • No Risk - No evaluation needed
Round Mountain	0.75 miles Southwest of nest sites	<p><u>South, Southeast or Southwest Wind - Only</u></p> <p>Check nests prior to burn</p> <ul style="list-style-type: none"> • If no birds present: burn within conditions allowed by burn plan. • If birds are present - Burn with good or better dispersion conditions to prevent excessive smoke at nests. <p><u>Other wind conditions</u></p> <ul style="list-style-type: none"> • No Risk - No evaluation needed

Determination of Effect – The determination of ““is not likely to adversely affect”” is made for the bald eagle. The rationale for this finding is that any impacts to this species would be indirect and at an insignificant level. Monitoring and modified burn plans will be conducted as required.

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Alabama Streak Sorus Fern (*Thelypteris pilosa* var. *al.*)

Environmental Baseline – Alabama streak-sorus fern

The Alabama Streak-sorus fern was federally listed as threatened in 1992. It was first discovered in 1949 on sandstone cliffs above the Sipsey Fork, in Winston County, Alabama. Construction of a bridge destroyed the type locality, and it was believed to have been extirpated until its rediscovery approximately 8 miles upstream (Short & Freeman 1978). Subsequent field surveys have found at least 15 other sites along 4 miles of the Sipsey Fork, however this species has not been found elsewhere, despite numerous field surveys.

The Alabama Streak-sorus fern is a relatively small spray-cliff fern. It is confined to Pottsville sandstone formations and requires high substrate moisture, high humidity and shade. Plants are located within crevices or fissures, on ceilings and recessed walls or ledges on overhangs associated with small waterfalls. Occasionally plants could be found in moist seepage areas on exposed vertical rock faces. It is a spray-cliff dependent species, and must have moisture by seepage, humidity, shade, but also adequate diffuse light. The herbaceous species assemblage of the sandstone overhangs is part of the river gorge's well developed hemlock forest association (Kral 1983, Gunn 1997).

Direct, Indirect, and Cumulative Effects

The Alabama streak-sorus fern is known only to occur in Winston County, Alabama. The type locality was destroyed, but subsequent work by the Alabama Natural Heritage program revealed 17 distinct extant occurrences distributed along 4 miles of the Sipsey Fork (Gunn 1997). This plant was not found in any of the surveys of the proposed areas to be treated under this project however its habitat are potentially present on at least 2 burn units. The minimum historical distribution is assumed to include this area plus the stretch of the stream which is now inundated by the Smith Lake impoundment. It is probable that the species also occurred downstream, and perhaps even on Brushy Creek or Rockhouse Creek (Gunn 1997). The Alabama Streak-sorus fern is found primarily on a single drainage on the Bankhead National Forest. The Sipsey River contains the only populations known in the world. It is thought that water impoundments on streams in the Black Warrior River drainage have destroyed a large number of fern colonies, and it is vulnerable to any activities that would change the hydrology of its habitat and dehydrate its microhabitat (USFS, 1997).

This small fern is found in rock shelters along the Sipsey Fork and mouth of Caney Creek. No plants were found during field surveys for this project. No impact to the species is expected or anticipated due to the fact that the plant is found within cave-like "rockhouse" environments. There is essentially no opportunity for the proposed project to have an impact upon this species. Fire line construction avoids these areas and all fire lines have been surveyed, with no plants located within these areas. The actual fire would not reach such areas as they typically contain no combustible material to carry the fire.

Mitigation actions included in the proposed project are primarily focused upon the fire lines constructed with heavy equipment and the use of hand crews to construct line where needed to protect water quality and to prevent damage to glade and rock habitats. The project will be conducted such that it will not have a direct or indirect impact on this species. No cumulative impact is anticipated due to the fact that no direct or indirect actions will affect this habitat.

Determination of Effect - A finding of "no effect" is based upon the fact that there is no opportunity for this practice to impact the plant either directly or indirectly. The habitat for these plants are separated from the fire line construction activity, erosion control will be utilized on all constructed fire lines as needed to maintain water quality, and the fire will not reach the areas where these plants exist.

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Kral's water plantain (*Sagittaria secundifolia*)

Environmental Baseline – Kral's water plantain

This is an aquatic perennial plant that occurs along Sipsey and Caney creeks. It is a submerged to emersed aquatic perennial. It occurs on frequently exposed shoals or rooted among loose boulders in quiet pools up to 3 feet in depth. On the Bankhead National Forest, plants have been found rooted tightly in cracks of sandstone bedrock along the Sipsey Fork, in the Wild and Scenic River corridor and, more recently, in the Caney Creek drainage. This plant was not observed during field surveys of the proposed project. Activities that increase water quality degradation, stream turbidity and siltation from erosion pose a significant threat to this species.

Direct, Indirect and Cumulative Effects: None are anticipated. There are no known populations of this plant within the proposed burn areas. Aquatic plant species are not anticipated to be directly impacted by prescribed burning activities as no activities will occur within the streams. No indirect effects are anticipated from proposed prescribed burning as erosion control measures will be utilized to control potential erosion from constructed fire lines. Erosion control measures will be used as needed on all sites to protect water quality. These measures consist of constructing water bars, turnouts, as well as vegetation establishment by seeding and mulching. Thus no indirect or cumulative effects are anticipated downstream. No cumulative effects are anticipated as proposed burn units are widely separated and will be burned at various times.

Determination of Effect – A finding of “no effect” is based upon the fact that there is no opportunity for this practice to impact the plant either directly or indirectly. The habitat for these plants are separated from the fire line construction activity, erosion control will be utilized on all constructed fire lines as needed to maintain water quality, and the fire will not reach the areas where these plants exist.

Flattened Musk Turtle (*Sternotherus depressus*).

Environmental Baseline -- Flattened musk turtle

Flattened musk turtles are listed as threatened under the Endangered Species Act (USFWS 1987). A recovery plan has been completed for this species (USFWS 1990a). They are endemic to the upper Black Warrior River system in Alabama. Historically, flattened musk turtles inhabited 10 to 20 percent of the streams in the upper third of this river basin. Currently, they have been extirpated from over 30% of their historical range. Extant populations and potential habitats on or near Bankhead National Forest are displayed in the table below. Only about 15% of the habitat appears to support healthy reproducing populations. The species is considered to be in decline range-wide (USFWS 2000b). According to the recovery plan (USFWS 1990a), the species can be de-listed when there is a viable population maintained over a 10-year period in at least 12 streams, including 8 or more streams with the best quality habitat. Potential impacts to this species from the project include changes to water quality.

The flattened musk turtle is an aquatic species 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.

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Overview of known or suspected flattened musk turtle occurrences and potential habitat on or within five miles of the Bankhead National Forest.

Forest	County	River Basin	Watersheds	Miles		Population Status ¹	Viability Risk ²	
Bankhead	Winston	Black Warrior	Clear	14		historic	TF	S
			Lewis Smith	32		present		SF
			Lower Brushy	36		dense	T	PF
			L. Sipsey Fork	32		present	T	F
			U. Sipsey Fork	87		present	F	
Total								

¹ Population status based on Bailey (1989), Schnuell and Guyer (1996), USFS 1996, Holmes & Marion (2002)
² Viability risks: M = moderate, H = high; S = sediment, P = point-source pollution, T = thermal, F = altered flow

Direct, Indirect and Cumulative Effects: Aquatic habitat will be protected by forest level actions to protect water quality. Project level implementation of measures to protect water quality will also be utilized. This is addressed by employing mitigating measures to avoid, limit and minimize the transfer of sediment that potentially enters into aquatic sources. Erosion control measures as described in the “Proposed Management Action” section will prevent excessive soil erosion. The exercise of project mitigations and best management practices, which are part of this proposal, will provide protection of aquatic resources in the Bankhead National Forest. Given the protection afforded by the erosion control measures as described and by the overall water quality protection mechanisms of the Forest Land and Resource Management Plan, direct and indirect physical damage would be prevented to this species and its habitat. There should be no direct or indirect impacts to the habitat of this species.

A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. The analysis includes all actions regardless of who undertakes the actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time. While this project is considered as relatively minor in impact, a collection of other actions of can impact habitats. Essentially all Forest Service actions are evaluated for their impact upon federally listed species such as this one. Actions off the forest are generally not evaluated to such an extent. These actions are also under no regulatory authority of the Forest Service. There are numerous threats to aquatic habitats including sediment, nutrients, flow, temperature, habitat connectivity and many others. Cumulative effects for the total of all of the burns during a season are minimized as the mitigation measures for soil erosion will be carried out as needed on all burn sites. Burns are generally carried out between the months of December and April. Thus, there would not be an excessive area within any one watershed that was burned during a short period of time. There are no anticipated cumulative effects to the flattened musk turtle from this project.

Determination of Effect: The practices and management actions necessary to carry out the this prescribed burn project will have “**no effect**” the flattened musk turtle. The flattened musk turtle is an aquatic species that is found within the drainage of the upper Black Warrior. The proposed project could result in direct and indirect impacts to stream habitats where this species occurs, however project mitigations will prevent this.

Mitigation actions included in the proposed project are primarily focused upon the use of erosion control measures on fire lines constructed with heavy equipment and the use of hand crews to construct line where needed to protect water quality. Hand lines are utilized in areas that exclude heavy equipment from operating, such as in close proximity to streams. With these measures in place the chance for habitat damage is not anticipated.

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Indiana bat (*Myotis sodalis*) & Gray bat (*Myotis grisescens*)

Environmental Baseline –Indiana bat & Gray bat

The Indiana and Gray bat are Federally listed as endangered species and are listed by the State of Alabama as having a Priority One – Highest Conservation Concern. Small populations of Indiana and Gray bats were found in two caves on the Bankhead National Forest in February, 1999. Their presence has been verified by Forest Service monitoring efforts conducted bi-annually during 2001, 2003 and 2005. Many other caves are present within the karst landscape of Bankhead National Forest and may provide habitat for these species. Additional surveys conducted on Bankhead National Forest 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 individuals present during the summer. Due to apparently small populations, they are difficult to capture by commonly deployed techniques such as mist netting. Thus it is not known how many Indiana bats stay within the Forest boundaries during the non-hibernating season. No maternity colonies have been documented on Bankhead. 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 Forest from spring to fall.

Gray bats forage primarily over water while Indiana bats feed in and around the tree canopy of floodplain, riparian and upland forests. Within flood-plain forests the 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. Gray bats use caves for both summer roosting, maternity colonies and winter hibernation. Indiana bats use larger trees with hollows or loose bark for their summer roosts and maternity colonies, but spend their winters hibernating in caves like Gray bats.

For Indiana bats, there are 13 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 at Bankhead are within the Priority Three category. Their 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.

The Gray bat colonies are entirely restricted to caves. Their population was estimated at about 2.25 million in 1970. Although there have been declines since that time, the population of some sites is stable or increasing. They hibernate in caves and it is estimated that nine known caves house about 95 percent of their population. Banding studies indicate that these bats occupy a rather definite summer range with relation to the roosting site and nearby foraging areas over large streams.

Information and research about summer roosting sites of Indiana bats 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. The main threats to this species are availability of natural roost structures, loss of winter hibernaculum and human disturbance.

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Direct, Indirect and Cumulative Effects:

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

Hibernacula

Indiana and Gray 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 indicate 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 is 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 days supply of fat reserves. Disturbance during hibernation is considered to be a potentially fatal event.

Most Indiana and Gray bats enter hibernation in November and emerge in late March or April. These two species of bats are in hibernation during the time when the majority of the prescribed burning activity is planned to occur. Dormant season prescribed burning is conducted between early December and late March (10,744 acres – planned for dormant season). Thus dormant season fire would not have a direct effect upon hibernating Indiana and Gray bats, however smoke from a burn has a potential to directly effect bats in the hibernacula. The West Fork burn is planned for dormant season and is within the Secondary Protection Zone for a number of caves (see Table 3). There are no known hibernacula in these caves although there are several of which have not been surveyed for Indiana or Gray bats. These caves with no current survey will be treated as hibernacula until such time as the proper survey has been conducted and they are verified as hibernacula or not. There are 16 caves which have not been surveyed for the West Fork burn.

The 16 caves within the Secondary Protection Zone of the West Fork burn will be surveyed prior to any burn activity occurring. Smoke management from all dormant season burns will be such that all practicable attempts will be made to preclude caves from being directly in the path of the smoke plume or if that cannot be accomplished, that dispersion indices are in place to preclude smoke management concerns. Location of post burn smoke will also be considered during planning of prescribed burns. The Prescribed Burn Plans for all burns will be reviewed by the Bankhead National Forest District Wildlife Biologist and the Bankhead National Forest Fire Management Officer prior to preparation of the plan. Monitoring of smoke within caves which are known or potential hibernacula will be conducted if deemed necessary by the District Wildlife Biologist in consultation with the Fish and Wildlife Service.

The Dry Creek and Pine Torch burns are planned for the growing season. Growing season burns generally take place from April through August (4,540 acres planned for growing season). Bats are not confined to or dependant on the hibernacula during these times. These two burns are within the Secondary Protection Zones for a number of caves with one known hibernacula and several caves which have not been surveyed. However, they will be burned at a time when bats are not hibernating, so no direct or indirect effects to bats in the hibernacula are anticipated and there is no immediate need for additional surveys of the caves prior to the burn event. Growing season burns would not have any potential for direct or indirect impact upon the hibernacula as they are conducted after the bats have left the caves.

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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.

To avoid possible harassment of swarming Indiana bats, prescribed burning near caves is prohibited by the revised Forest Land and Resource Management Plan between September 1 and December 1 within the Primary Zone (0.5 mile) and Secondary Zone (1.5 miles) of hibernacula. This prohibition will effectively avoid any impacts to swarming areas during the fall. Neither dormant season or growing season burns of forested stands are generally conducted during this time period. The Pine Torch burn is within the Secondary Protection Zone for a known hibernacula and within the Secondary Protection Zone for 16 un-surveyed caves. The Dry Creek and the West Fork burns are within the Secondary Protection Zone for 16 un-surveyed caves. The un-surveyed caves will be treated as hibernacula until such time as a survey is conducted to determine their status. However, the Pine Torch and Dry Creek burns will be conducted during the growing season, thus no impact to fall swarming areas will take place. No direct or indirect effects are anticipated on these burns. The West Fork burn will be conducted during the dormant season. However, it will not be conducted during the prohibition period for fall swarming. The Prescribed Burn Plans for all burns will be reviewed by the Bankhead National Forest District Wildlife Biologist and the Bankhead National Forest Fire Management Officer and no burning during this period will be approved. No burns for either growing season or dormant season are planned to occur during the time identified for protection of fall swarming, thus no direct or indirect effect will occur.

Maternity Roosts

Gray bats utilize caves for maternity roosts. No caves in Bankhead have been found to be used as maternity roosts. Maternity roosts for Indiana bats 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 forests which are streamside ecosystems 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 some 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 regarding the growing season burns. The revised Forest Land and Resource Management Plan prohibits prescribed burning of potential maternity roosting habitat from May 1 through July 1, except where site-specific inventories indicate Indiana bats are not likely to be present. The growing season burns that are planned for 2007 will follow this guidance and will not be conducted during this time period, unless a site specific survey is conducted prior to the burn activity and the survey indicates that Indiana bats are not present. Growing season burns on Bankhead are expected to be conducted from the early part of April through the end of April. Burns into May are not anticipated and are not planned at this time. This will effectively prevent the direct impacts to Indiana bats that are in maternity roosts.

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Indirect effects to maternity roost habitat from a burn during any time period could also include habitat changes of both a positive and negative nature. Habitat may receive an indirect benefit in that a few additional snags may be produced or improved from the prescribed burning activity. The low intensity dormant season burning is not expected to consume standing dead snags. A few snags may catch fire and eventually fall to the ground, so there can also be low levels of habitat loss also. Some snags may be felled for the reasons of personnel safety or to provide control of the fire. Snags along the fire line present a safety hazard to burn personnel and in some cases they must be removed. Snags within the perimeter of the burn will sometimes catch fire. These are a hazard if they are burning sufficiently to throw embers over the established fire line. In some instances they must be controlled by felling. During the dormant season, this will not present a hazard to Indiana bats, as they are in hibernation in a cave. During the growing season burns, this activity is anticipated to occur prior to the period of maternity roosting. Thus, some indirect loss of habitat may occur, although it would be of minimal amount. Most of the snags that are taken for safety reasons on a prescribed burn are located within uplands. Constructed fire lines are typically not located within likely maternity roosting areas such as floodplain areas. As most maternity roosts utilize trees within or adjacent to the floodplain of permanent streams, the trees felled along a constructed fire line are not the ones utilized for maternity roosts. Thus, the loss of some snags as a result of constructed fire lines and those removed for personnel safety along the fire lines would not have a direct or indirect effect upon maternity roosts for Indiana bats.

Other Habitat

Prescribed fire may have beneficial effects on the Indiana bat by creating an open understory within forest stands, which improves foraging conditions. An increased insect biomass may result from woodland fires and thus would likely have an indirect benefit to foraging bats.

A cumulative effects analysis should consider incremental impact of actions when added to past, present and reasonably foreseeable future actions. The analysis includes all actions regardless of who undertakes the actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time. While this project is considered as relatively minor in impact, a collection of other actions of can impact habitats. Essentially all Forest Service actions are evaluated for their impact upon federally listed species such as these. Actions that take place off the forest are generally not evaluated to such an extent. These actions are also under no regulatory authority of the Forest Service. Management activities are being conducted that will benefit habitat for these bats in the form of opening overstocked forest stands, conducting prescribed burns to open the understory and mid-story canopy and allow for increased insect production and foraging opportunity, protecting hibernacula and restoring water sources within known bat ranges. It is anticipated that these projects are improving bat habitat on the forest. Indiana bats are not known to occur on private lands within the counties where Bankhead National Forest is located. The forested areas on the southern end of the forest are not typical habitat for the Indiana bat, as the area is dominated by pine stands. There are no known caves and there are no records of its occurrence there.

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Table # 3. Prescribed Burns in Primary or Secondary Cave Protection Zones

Burn Name (s)	Protection Zone	Cave Name	Biol. Survey Status
West Fork/Pine Torch	Secondary	Drizzle	None
	Secondary	Air Conditioner	01/99
	Secondary	Down-Up-Down	None
	Secondary	Salt Peter	06/98
	Secondary	Salt Peter – Entrance #3	12/97
	Secondary	Little Horse	01/99
	Secondary	Sliver	01/98
	Secondary	Snail	None
	Secondary	Beaver	None
	Secondary	Cemetery	12/98
	Secondary	Bridge	12/98
	Secondary	Moss	01/99
	Secondary	Horse Creek	01/99
	Secondary	South Sink	12/98
	Secondary	Dry Stream	None
	Secondary	Giant Cricket	None
	Secondary	Montgomery Creek	03/98
	Secondary	Criss-Cross	None
	Secondary	Reject	None
	Secondary	Lost turtle	10/98
	Secondary	Slab	None
	Secondary	Dave	None
	Secondary	1613	None
	Secondary	1620	12/98
	Secondary	Well (aka 1391)	01/98
	Secondary	Little turtle	None
	Secondary	Basswood	01/99
	Secondary	World Unknown	None
	Secondary	Dying World	None
	Secondary	Twisted Cedar	None
	Secondary	Gumbo	02/98
	Secondary	Blue Pool	01/99
	Secondary	Zebs	None
Pine Torch	Secondary	Armstrong	02/05
Dry Creek	Secondary	Twin Springs	10/98
	Secondary	Captain Jacks (aka 1236)	None
	Primary	Mountain Springs	05/98, 01/03
	Secondary	Barbed Wire	None
	Secondary	Salamander	11/98
	Primary	Fish	04/98
	Secondary	Dry Creek	04/98
	Secondary	Still	02/98
	Secondary	Pretty Little Hole	None
	Secondary	Doug almost Sinks	None
	Secondary	Scrounge Springs	None
	Secondary	Caribou Caverns	None
	Secondary	Drip In The Eye	04/98
	Secondary	Mountain Springs Pit (4006)	05/98

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Comments for Table #3 and Table #4. Until caves have been surveyed for use by federally listed bats, these species are assumed to be present and habitat is maintained for them by applying standards for occupied caves.

Management activities within cave protection zones are coordinated with FWS.

West Fork is a dormant season burn. (15 unsurveyed caves within secondary protection zone)

Pine Torch is a growing season burn. (16 unsurveyed caves within secondary protection zone)

Dry Creek is a growing season burn. (6 unsurveyed caves within secondary protection zone)

Table #4

Bat Habitat	Practice/Concern	Burn	Mitigation Assessment/Actions
Known and Potential Hibernaculum (un-surveyed caves, see Table #3)	Smoke - during hibernation period	All Dormant Season Burns including West Fork	Smoke Target Planning – Sensitive Resource <ul style="list-style-type: none"> • Develop burn plan to avoid excessive smoke in these areas (consider wind direction, dispersion index). • Monitor hibernacula with Smoke Detector as needed (prior planning required) • Conduct biological survey of caves where needed
Maternity Roosts (potential habitat)	Growing Season Burning	Dry Creek Pine Torch	Prescribed Burning prohibited – May 1 thru July 1, in potential maternity roosting habitat, except where site-specific inventories indicate Indiana bats are not likely to be present. <ul style="list-style-type: none"> • Conduct burn outside of this time period. • Retain snags in likely habitat when possible.
Fall Swarming at Known and Potential Hibernaculum (un-surveyed caves see Table#3)	Smoke and Prescribed Burning	Pine Torch West Fork Dry Creek	Prescribed burning prohibited within the primary and secondary cave protection zone between September 1 & December 1. <ul style="list-style-type: none"> • Conduct burn outside of this time period

Determination of Effect: There are numerous protective mechanisms built into the Revised Forest Land and Resource Management Plan for the Indiana and Gray bat. All of the prescribed burn plans of the District consider the known and potential hibernacula as smoke sensitive targets, if they are within an area of potential risk. Burn plans also consider the Primary and Secondary Cave Protection Zones for known and potential hibernacula. There is consideration of maternity roosting areas with prohibitions for burning during specified periods. Fall swarming sites are protected by specified periods that prohibit burning. Considering the fact that major considerations are in place for the protection of the Indiana and Gray bat within the prescribed burning program, and that there are no anticipated direct or indirect impacts to these species, it is highly unlikely that the any of the effects will cumulatively effect the species. It is anticipated that ongoing efforts of the Forest Health and Restoration Project will result in improved habitat for all bats over the Bankhead National Forest. Thus the determination of “**is not likely to adversely affect**” is made. The overall result of the prescribed burning program is anticipated to be one of beneficial effects.

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Eggert's Sunflower (*Helianthus eggertii*)

Environmental baseline – Eggert's sunflower

This plant lives in open oak/pine woodlands and grasslands and was federally listed as threatened in 1997 (USFWS 1997). It blooms in July and August, with flowers (actually composite heads of many small flowers) that are relatively large being about 3.5 inches in diameter, its stem is smooth and waxy, and the tapering leaves with rounded bases are smooth except for a scattered roughness on the upper surface (Pyne, 1998).

The habitat has been described as rocky hills, barrens or open upland oak-pine woods. Soils can be sands, clays, chert or gravel or open upland woods (Kral 1983). The open wood habitats are often dominated by oak forests, specifically white oak, black oak and southern red oaks, as well as hickories and pines. The barrens are openings dominated by perennial grasses and herbs (Jones 1994).

It prefers a habitat type which was presumably more widespread when fire was a more common event in the landscape. This grass and herb-dominated habitat type is grasslands, woodlands and barrens, and is related to the prairies of the Midwest, both in structure, species composition, and ecology (Pyne, 1998). Eggert's sunflower is thought to be a relict species of the fire-dependent barrens habitats, sustained by lightning fires and aboriginal burning at a landscape scale (Jones, 1994).

Presumably, when fire occurred more frequently and large grazing animals roamed free, there were large areas of parts of Tennessee and the Southeast which had relatively few trees, with abundant stands of native grasses and flowering herbs, like composites and legumes (Pyne, 1998). Under present conditions, this community persists on roadsides and recently disturbed areas. In Alabama, this species has been found in Franklin and Winston counties outside of the established administrative boundary of the Bankhead, in open ridge top oak savannahs. Recent surveys of sites to be treated within the Forest Health and Restoration Project did not reveal the presence of this species. There are no documented findings of this plant on Forest Service owned lands within Bankhead National Forest.

Direct, Indirect, and Cumulative Effects

Direct impacts to this plant have been potentially minimized by conducting pre-project surveys to determine its presence. Stands to be burned under this project were surveyed and this species was not found on any site although small, undiscovered populations could occur. There will be no direct impacts anticipated to this species from the project.

Prescribed fire is a management practice that would be indirectly beneficial to this species. Potential habitat sites could be maintained by prescribed burning activities. The Forest Health and Restoration Project calls for restoration and maintenance of open woodland habitats with understory forbs and grasslands. All areas which are treated by prescribed burning would provide some potential benefit. In addition, glades and barrens, with which this species is sometimes associated, would be protected from direct effects.

Cumulative effects to this species were considered. In general, the usage of prescribed fire for maintaining open woodland conditions would potentially have the greatest beneficial impact to this species.

Determination of Effect

This plant is not known to exist on the Bankhead National Forest. Although it has been found near to the administrative boundary of the Bankhead, all previous plant surveys since 1997 as well as those conducted recently have failed to locate a single remnant plant or other population of this species within the areas to be treated. For that reason, the determination is "No Effect" on Eggert's sunflower.

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Table #5. Summary Table of Determinations for Federally Listed Species of the Bankhead National Forest

Scientific Name	Common Name	Status ¹	Habitat	Notes	Determination/Comments
<i>Myotis grisescens</i>	Gray Bat	E	1	Known from Lawrence County.	Not likely to adversely effect. Burning program will ultimately benefit the species.
<i>Myotis sodalis</i>	Indiana bat	E	1	Known from Lawrence County.	Not likely to adversely effect. Burning program will ultimately benefit the species, particularly growing season burns.
<i>Haliaeetus leucocephalus</i>	Bald Eagle	T	11	Known sites occur along Smith Lake.	Not likely to adversely affect. Some burns are near known habitat - nest and smoke monitoring will be conducted in certain circumstances. Any impacts would likely be insignificant.
<i>Picoides borealis</i>	Red-cockaded woodpecker	E	17	Does not occur on Bankhead	No effect.
<i>Sternotherus depressus</i>	Flattened musk turtle	T	A	Occurs on Bankhead.	No effect. Aquatic species will be protected by project and forest level considerations. <u>M1/</u>
<i>Epioblasma brevidens</i>	Cumberlandian combshell	E	A	Does not occur on Bankhead.	No effect.
<i>Epioblasma metastrata</i>	Upland combshell	E	A	Has not been recorded within the Black Warrior drainage since the 1900's.	No effect.
<i>Epioblasma turgidula</i>	Turgid blossom pearly mussel	E	A	Does not occur on Bankhead and may be extinct.	No effect.
<i>Lampsilis atilis</i>	Fine-lined pocketbook	E	A	Occurs on Bankhead.	No effect. Aquatic species will be protected by project and forest level considerations. <u>M1/</u>
<i>Lampsilis perovalis</i>	Orange-nacre mucket	T	A	Occurs on Bankhead.	No effect. Aquatic species will be protected by project and forest level considerations. Critical habitat not adversely affected. <u>M1/</u>
<i>Medionidus acutissimus</i>	Alabama moccasinshell	T	A	Occurs on Bankhead.	No effect. Aquatic species will be protected by project and forest level considerations. <u>M1/</u> Critical habitat not adversely affected.
<i>Medionidus parvulus</i>	Coosa moccasinshell	E	A	Has not been recorded on Bankhead in recent years.	No effect. Aquatic species will be protected by project and forest level considerations. <u>M1/</u>
<i>Pleurobema furvum</i>	Dark pigtoe	E	A	Occurs on Bankhead.	No effect. Aquatic species will be protected by project and forest level considerations. Critical habitat not adversely affected. <u>M1/</u>

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Scientific Name	Common Name	Status ¹	Habitat	Notes	Determination/Comments
<i>Pleurobema perovatum</i>	Ovate clubshell	E	A	Has not been recorded on Bankhead in recent years.	No effect. Aquatic species will be protected by project and forest level considerations. <u>M1/</u> Critical habitat not adversely affected.
<i>Pleurobema plenum</i>	Rough pigtoe	E	A	Does not occur on Bankhead.	No effect.
<i>Ptychobranthus greeni</i>	Triangular kidneyshell	E	A	Occurs on Bankhead.	No effect. Aquatic species will not be affected by the project. <u>M1/</u> Critical habitat not adversely affected.
<i>Lampsilis orbiculata</i>	Pink Mucket Pearly	E	A	Does Not occur on Bankhead	No effect. Aquatic species will not be affected by the project. <u>M1/</u>
<i>Dalea foliosa</i>	Leafy prairie clover	E	6	Species not documented on Bankhead.	No effect. Glade species will not be affected by this project. <u>M2/</u>
<i>Helianthus eggertii</i>	Eggert's sunflower	T	8	Species not documented on Bankhead.	No effect. Species not found on project site during on site surveys.
<i>Lesquerella lyrata</i>	Lyrate bladder-pod	T	6	Species not documented on Bankhead.	No effect. Glade species will not be negatively affected by this project. <u>M2/</u>
<i>Marshallia mohrii</i>	Mohr's Barbara's Buttons	T	2	Species not documented on Bankhead.	No effect. Species not found on project site during on site surveys.
<i>Sagittaria secundifolia</i>	Kral's water-plantain	T	A	Occurs on Bankhead.	No effect. Aquatic species will not be affected by the project.
<i>Thelypteris pilosa var al.</i>	Alabama streak-sorus fern	T	7	Occurs on Bankhead.	No effect. Potential habitat is not present and will not be affected.
<i>Xyris tennesseensis</i>	Tennessee yellow-eyed grass	E	11	Species not documented on Bankhead.	No effect. Species not found on project sites during on site surveys.

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1/ Status -
E=Endangered
T=Threatened

Habitat Code

1 = Cave Habitats
2 = Wetland (Bog) Habitats
6 = Glades, Prairies, and Woodlands Habitats
7 = Rock Outcrop and Cliff Habitats
8 = Grass/Forb Habitats
10 = Mid- to Late- Successional Deciduous Forest Habitats
11 = Forest Riparian Habitats
12 = Habitat Generalist
13 = Area Sensitive Mid- to Late- Successional Deciduous Forest Habitats
17 = Southern Yellow Pine Forests and Woodland Habitats
18 = Mixed Mesic Forest Habitats
19 = Mixed Xeric Forest Habitats
20 = Shrub/Seedling/Sapling Habitats
21 = Seeps and Springs Habitats
A = Aquatic Species

M1/ Erosion control measures on fire line construction, use of alternative fire breaks such as streams and existing man-made features as well as use of hand lines in sensitive areas.

M2/ Primarily avoidance of glade areas with heavy equipment during fire line construction and prescribe burning activities. Any populations present in this habitat would be protected by these measures.

Determination of Effect on Other Federally Listed Species

The proposed activity will have “No effect” on the red-cockaded woodpecker, turgid blossom mussel, rough pigtoe, pink mucket pearly mussel, cumberlandian combshell, Leafy prairie clover, Lyrate bladderpod, and Tennessee yellow-eyed grass. The rationale for this decision is that the project will not intersect with potential habitat for these species, thus there is no opportunity for the proposed project to effect the species in either a direct, indirect or cumulative manner.

The determination is “ No effect” on: riparian or aquatic habitat for the flattened musk turtle; habitat for Eggert’s Sunflower; aquatic habitats for Kral’s water plantain; the Alabama streak-sorus fern; aquatic habitats of the orange-nacre mucket mussel, the Alabama moccasinshell, the Coosa moccasinshell, the triangular kidneyshell mussel, the dark pigtoe mussel, the fine-lined pocketbook mussel, upland combshell mussel and the ovate clubshell mussel, as there will be no change in water quality or sediment delivery.

The determination is that this project “is not likely to adversely affect” the nesting habitat of the bald eagle, Gray bat and Indiana bat.

Areas designated as critical habitat designation would be protected by project and forest level water quality protection mechanisms. The project will not jeopardize the continued existence of the species or destroy or adversely modify critical habitat for the two threatened species of mussels including the orange-nacre mucket and the Alabama Moccasinshell. The project will not jeopardize the continued existence of the species or destroy or adversely modify critical habitat for the three species of endangered mussels including the ovate clubshell, dark pigtoe, or the triangular kidneyshell.

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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, conference 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.

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Sensitive Species

<u>Scientific Name</u>	<u>Common Name</u>	<u>Status1</u>	<u>Rank</u>
<u>Terrestrial Species</u>			
<i>Aesculus parviflora</i>	Small flowered buckeye	S	S2S3G2G3
<i>Astragalus tennesseensis</i>	Tennessee Milkvetch	S	S1G3
<i>Aureolaria patula</i>	Spreading yellow false foxglove	S	S1G2G3
<i>Carex brysonii</i>	Bryson's sedge	S	S1G1
<i>Delphinium alabamicum</i>	Alabama larkspur	S	S2G2
<i>Diervilla rivularis</i>	Riverbank bush-honeysuckle	S	S2G3
<i>Hymenophyllum tayloriae</i>	Gorge filmy fern	S	S1G1G2
<i>Juglans cinerea</i>	Butternut	S	S1G3G4
<i>Leavenworthia alabamica var.ala</i>	Alabama Gladecress	S	T2T3G2G3
<i>Leavenworthia crassa</i>	Fleshyfruit Gladecress	C&S	S1G2
<i>Lesquerella densipila</i>	Duck River Bladderpod	S	SHG3
<i>Monotropsis odorata</i>	Sweet pinesap	S	G3
<i>Asplenium x ebenedoides</i>	Scott's Spleenwort	S	HYBS1
<i>Marshallia trinervia</i>	Broadleaf Barbara's buttons	S	S3G3
<i>Neviusia alabamensis</i>	Alabama snow-wreath	S	S2G2
<i>Plantanthera intergra</i>	Yellow fringeless orchid	S	G3G4
<i>Plantanthera intergrilabia</i>	White fringeless orchid	C&S	S2G2G3
<i>Robina viscosa</i>	Clammy Locust	S	G3
<i>Rudbeckia triloba var pinnatiloba</i>	Pinnate-lobed Black-eyed Susan	S	S2S3G4T2
<i>Scutellaria alabamensis</i>	Alabama skullcap	S	S2G2
<i>Sedum nevii</i>	Nevius' stonecrop	S	S3G3
<i>Silene ovata</i>	Blue Ridge catchfly	S	S1G2G3
<i>Talinum calcaricum</i>	Limestone Fameflower	S	S2G3
<i>Talinum mengesii</i>	Menge's fameflower	S	S2S3G3
<i>Thalictrum mirabile</i>	Little mountain meadow rue	S	QS1G2G3
<i>Trillium lancifolium</i>	Lanceleaf Trillium	S	S2S3G2
<i>Trillium simile</i>	Jeweled Trillium	S	G3
<i>Speyeria diana</i>	Diana Fritillary	S	S3G3
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared bat	S	
<u>Aquatic Species</u>			
<i>Aneura maxima</i>	A liverwort	S	G1G2
<i>Cheilolejeunea evansii</i>	A liverwort	S	S1G1
<i>Jamesianthus alabamensis</i>	Jamesianthus	S	S3G3
<i>Pellia X appalachiana</i>	A liverwort	S	G1G2
<i>Plagiochila echinata</i>	A liverwort	S	G2
<i>Radula sullivantii</i>	A liverwort	S	G2
<i>Riccardia jugata</i>	A liverwort	S	G1G2
<i>Gomphus hybridus</i>	Cocoa clubtail	S	S3S4G3G4
<i>Hydroptila paralatosa</i>	A caddisfly	S	S2G2
<i>Rhyacophila carolae</i>	A caddisfly	S	S1G1
<i>Elliptio arca</i>	Alabama spike	S	S2G3
<i>Obovaria jacksonian</i>	Southern Hickorynut	S	S2G1G2
<i>Obovaria unicolor</i>	Alabama Hickorynut	S	S2G3
<i>Strophitus subvexus</i>	Southern creekmussel	S	S2G3
<i>Villosa nebulosa</i>	Alabama rainbow	S	S3G3
<i>Etheostoma bellator</i>	Warrior darter	S	S2G2
<i>Etheostoma douglasi</i>	Tuskaloosa darter	S	S2G2
<i>Etheostoma phytophyllum</i>	Rush darter	S	S2G2
<i>Etheostoma tuscumbia</i>	Tuscumbia darter	S	S1G1
<i>Percina sp.cf.macrocephala</i>	Longhead darter	S	G3
<i>Nectrus alabamensis</i>	Black Warrior waterdog	S	S2G2

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1S = sensitive; C = candidate for Federal listing

Some species are of concern although not listed as threatened or endangered by the FWS. They have been ranked Globally as G1, G2 or G3 by the Natural Heritage Network of The Nature Conservancy, which means viability concerns throughout their entire range. This may be due to habitat requirements, range limits or particular vulnerability to activities. These species have been listed by the Regional Forester as Sensitive and require special consideration in order to ensure that viability is not impaired and to preclude any trend toward the necessity of their being proposed for listing as threatened or endangered by the FWS. According to the Natural Heritage Network rankings, G1 species are critically imperiled globally because of extreme rarity (typically less than 6 occurrences, less than 1,000 individuals or very few remaining acres) or because of some factor(s) making them especially vulnerable to extinction. Species ranked G2 are imperiled globally because of extreme rarity (typically 6-20 occurrences, 1,000 to 3,000 individuals or few remaining acres) or because of some factor(s) making them very vulnerable to extinction. Species ranked as G3 are rare or uncommon (typically 21-100 occurrences or 3,000 to 10,000 individuals) throughout its range; or found locally, even abundantly, in a restricted range (e.g. in a single state or physiographic region); or vulnerable to extinction throughout its range because of specific factors. Rankings begin with a T instead of a G are used for subspecies and two rankings together, such as G2G3, indicates uncertainty in the ranking of that species. A question mark (?) indicates some doubt concerning the status of the species or subspecies. Rankings preceded by an S indicate the status inside the state of Alabama as determined by the Alabama Natural Heritage Program. The list of plant and animal species is based upon the Southern Region Sensitive Species.

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Potential Impacts to Sensitive Species

Based upon the information examined as part of this evaluation, each species on the list is evaluated for potential impact. The rationale for these decisions is noted below. Forest Service is not required to consult or otherwise review potential impacts to sensitive species with the US Fish and Wildlife Service.

Black Warrior waterdog (*Necturus alabamensis*)

Distribution, Status, and Trend—The Black Warrior waterdog is a candidate for possible future federal listing. Globally the species is ranked as imperiled (G2); within Alabama, the species is ranked as “critically imperiled” (S1) (NatureServe 2003). It is considered at risk of population decline. This species has been identified as a priority 2 species of high concern (i.e. “imperiled”) within the State of Alabama (ADCNR 2003).

This species is endemic to the upper Black Warrior River system in Alabama. Currently, the species is known or suspected to inhabit four watersheds associated with the Bankhead National Forest. The National Forests represent approximately 40 percent of the species’ range within the State of Alabama. Within the Bankhead National Forest, Black Warrior waterdogs are scattered in distribution and locally rare in abundance. Highest densities have been documented in Brushy Creek.

Conditions of watersheds potentially supporting Black Warrior waterdogs.

Forest	HUC code	Watershed	Watershed Conditions				Viability		
			% FS	% ag	Road Density	Rating ¹	Status ²	Rank	Risk ⁴
Bankhead	3160110010	U. Sipsey Fork	87	1	L	E	L	F2	
	3160110020	L. Sipsey Fork	32	7	M	E	L		F
	3160110030	U. Brushy	82	2	L	E	L		
	3160110040	L. Brushy	36	6	M	E	L		F

¹ Based on sediment load relative to other NF watersheds: E= excellent, A= average, BA= below average
² H= historical, P= potential, A= abundant, C= common, L= locally rare, U= uncommon, R= rare, S= sparse, N= near
³ Terrestrial Rank: F1= critically imperiled (very high risk), F2= imperiled (high risk), F3= vulnerable (moderate risk)
⁴ Sources of potential impairment and moderate-high risk: S= sediment, P= point-source pollution, T= thermal, F = flow

Environmental Baseline - Black Warrior waterdogs primarily inhabit moderate currents over clay-sand and cobble-boulder substrates along the margins of medium to large wide and shallow streams (NatureServe 2003). This species is found in greatest abundance in association with large woody debris and cobble or boulders (NatureServe 2003). They appear to require detectable flow and ample leaf packs for cover and foraging. Other factors contributing to habitat suitability include a low silt load and substrate deposits, low nutrient content and bacterial counts, moderate temperatures, and minimal overall chemical pollution. Black Warrior waterdogs are thus considered to be sensitive to siltation, water temperature, point source pollution, altered flows, loss of large woody debris, or changes in riparian vegetation.

The historic decline of Black Warrior waterdog populations may be attributed to habitat modification, sedimentation, eutrophication, and other forms of water quality degradation. According to the recent assessment of National Forest watersheds (Leftwich 2003), two out of four possible watersheds show no indication of potential impairment (see table above). The other two watersheds exhibit combinations of indicators of potential impairment for water flow, with limited opportunities for National Forest management to improve conditions. All watersheds where the species potentially occurs have a condition rating of “excellent” (Clingenpeel 2003).

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Direct, Indirect and Cumulative Effects— Potential Forest Service management activities that could influence Black Warrior waterdogs include any actions that could increase sedimentation, siltation, or turbidity, change water flow, release toxic chemicals, adjust water chemistry or nutrient cycling, modify habitat structure, elevate temperatures, decrease large woody debris, or alter streamside canopy and late-successional riparian forests. Direct impacts are unlikely as equipment is not operated within the habitat of this species. Indirect impacts are remotely possible although unlikely due to adherence to revised Forest Land and Resource Management Plan guidelines regarding equipment limitations in riparian areas and project level erosion control measures as agreed upon in consultation with Fish and Wildlife Service for protection of aquatic habitats of other aquatic species. Siltation may affect this species by burying leaf packs where they seek food and cover, reducing the availability of oxygen that is detrimental to their individual health. These effects are unlikely given the protective measures that will be applied to the project. There could potentially be short-term and localized elevations in sediment run-off due to prescribed burning. Soil erosion will be reduced or controlled on fire lines to prevent sedimentation in streams. This situation could occur in the event of a large thunderstorm occurring immediately after a burn event. However, application of Forest Plan standards and project level soil erosion control measures would minimize the extent and magnitude of effects. The issue of sedimentation and changes in water quality from the burn must also be considered. Although some slight change in runoff immediately following a prescribed burn could be anticipated, it would be minor in nature as compared to that experienced with a wildfire situation. Dormant season prescribed burns only remove the upper layer of leaf litter and duff, thus no mineral soil will be exposed to soil erosion due to this activity. Properly managed fire would not adversely affect water quality or quantity. Any changes resulting from a prescribed burn during the dormant season would be short lived. Research from Clemson University (Van Lear) suggests that runoff concentrations of K, Ca, Mg, and Na were not significantly affected with prescribed fire. Full consideration of watershed restoration and species conservation priorities within project planning would further minimize the likelihood of multiple concurrent actions causing significant cumulative adverse effects. Species viability risks will remain constant, primarily due to the rarity of the supporting habitats and the continued elevated risks to off-Forest habitats. Streamside management zones and guidelines are in place for fire line construction to prevent soil erosion, thus no indirect or cumulative effects are anticipated downstream. This project will have *no impact* upon this species.

The proposed project will not directly or indirectly impact stream habitats where this species occurs, due to project mitigations. Mitigation actions included in the proposed project are primarily focused upon the fire lines constructed with heavy equipment. These actions include the use of erosion control measures on sloping areas where needed and recognition of equipment restrictions within existing streamside management zones. The use of fire lines constructed by hand tools will be utilized in areas that are close to streams and drains to provide additional protection to water quality.

The Upper and Lower Sipsey Forks are important watersheds for several aquatic T&E species and consequently, protection and restoration of habitat would likely be identified as a high priority. The watersheds thought to harbor this species are rated as in “excellent” condition. Cumulatively, many of the habitats on private lands are currently in a degraded state, making presence of quality habitats on National Forest land increasingly important to this species.

Determination and Rationale—Implementation of this project will have no impact and is not likely to cause a trend towards federal listing or loss of viability for the Black Warrior waterdog because 1) revised Forest Land and Resource Management Plan standards will provide protective measures which will avoid or minimize and fully mitigate negative effects so that they are insignificant and discountable to the viability of the populations and the species, and 2) Consultation with Fish and Wildlife Service has resulted in the use of erosion control measures on prescribed burn areas that have been effective at preventing and reducing soil erosion of disturbed areas.

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This species is associated with Southern Yellow Pine Forests and Woodlands. This tree is reported to have grown in ro woods in Winston County in the past. Other habitat descriptions include thin woods and open places. It is known to be present in a wildlife opening on Bankhead National Forest, but was not reported from field surveys of sites proposed for project. *No impact* is anticipated to this species.

JAMESIANTHUS

This species is associated with, but not limited to, low wet woods or areas commonly considered as streamside management zones. It needs mesic conditions and at least partial shade to survive. Jamesianthus is found in silty sand or gravelly ma of streams, especially where streams cut through limestone, in full or partial sun. Although the plant is recorded to occur along Capsey Creek, the project is not expected to impact the plant as it is located directly along the creek. *No direct im* is anticipated on this aquatic species. Streamside management zone guidelines will be followed on every tract to mitiga potential sedimentation. Direct physical damage to individuals and habitat (substrate) will also be prevented through implementation of streamside management zones and riparian area identification as regards equipment limitations. Eros control efforts will be utilized by Forest Service personnel to prevent, reduce or control erosion on upland sites as an additional mitigation measure to prevent indirect impacts. *No impact* is anticipated.

ALABAMA LARKSPUR

This species is associated with cedar glades, limestone or sandstone outcrops, sandstone cliffs or rocks. The larkspur is found in prairies, limestone cedar glades or open woods bordering these habitats. It is only found within Lawrence and Franklin counties of Alabama. Although glades occur within prescribed burn units, no effort to preclude it from them is made. Fire stimulates the diversity of glade-loving plants by clearing the overstory and allowing more sunlight to strike the soil. However, equipment is not allowed on glades. *No impact* on this species is anticipated from fire line construction as glade habitats are avoided. *A beneficial impact* will be likely as dormant season fire will remove woody debris and reduce encroaching vegetation from glades within the burn area, thus improving the habitat for this species.

GLADECRESS- Alabama and Fleshyfruit (fleshy-fruit is also a candidate species)

Alabama gladecress is associated with limestone glades and Fleshyfruit gladecress occurs on calcareous cedar glades. Potential habitat for these species does exist within BNF. Alabama gladecress has been encountered in Franklin and Lawrence counties. Fleshyfruit gladecress is known from Marshall county. Fleshy-fruit gladecress is a candidate species. Neither species was encountered during field surveys of the proposed burn areas. *No impact* on this species is anticipated from fire line construction as glade habitats are avoided. *A beneficial impact* will be likely as dormant season fire will remove woody debris and reduce encroaching vegetation from glades within the burn area, thus improving the habitat for this species.

MENGE'S and LIMESTONE FAMEFLOWER and TENNESSEE MILKVETCH

Menge's fameflower is associated with cedar glades, limestone or sandstone outcrops, sandstone cliffs or rocks. The fameflower is found in soil pools within expanses of flat sandstone outcrops that are large enough to allow full sunlight or near full sunlight on the outcrop. Menge's fameflower was found during field survey of one burn unit. This is also documented in Service records as occurring on at least one other planned burn unit. These plant locations will be considered when conducting the burn. No equipment will be operated in such a manner as to damage these plants, as fire lines have been surveyed and they are clear of this plant. Prescribed burning operations will likely benefit these plants.

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Limestone fameflower is associated with glades and rock outcrops. It has only recently been encountered in a glade on the Bankhead National Forest.

Tennessee Milkvetch has been found on limestone glades in Morgan County. Potential habitat exists within the Bankhead National Forest but this species has not been documented here.

No impact on these species is anticipated from fire line construction as glade habitats are avoided. A *beneficial impact* will be likely as dormant season fire will remove woody debris and reduce encroaching vegetation from glades within the burn area, thus improving the habitat for this species.

LITTLE MOUNTAIN MEADOW RUE, NEVIUS' STONECROP, LIVERWORTS AND SCOTT'S SPLEENWORT

These species are somewhat to very epipetric in that they are usually found on more or less vertical rock faces. Stonecrop is most likely on rock faces above creeks on limestone or shale, and on limestone outcrops in woodlands growing amongst various mosses under light to heavy shade. No plants were found field reviews.

Liverworts are mosslike plants that grow on damp ground, rocks and tree trunks. There are six species of liverworts that may occur in the Bankhead National Forest. *Cheilolejeunea evansii* is known to occur on the bark of hardwood trees in humid gorges in North Carolina. In Alabama, this species is reported to be found associated with hemlocks and riparian areas. *Plagiochila echinata* is also found occurring on rocks and streambanks in humid gorges and in the spray zone of waterfalls in North Carolina.

Scott's Spleenwort is epipetric. It is found in cool rock crevices (limestone, sandstone, or conglomerate cliffs) with a northern exposure. It is also associated with moist, shady habitats. It is not known from Winston County, but has been encountered in Jefferson County.

No impact on this species is expected, as the prescribed burning activities will not occur within this type of habitat. The proposed activity may occur in close proximity to these plants, but there is no opportunity for impact to the moist, rock habitats where they are found.

CADDISFLIES

Two species of caddisflies may be found in the Bankhead National Forest. *Hydroptila paralatosa* is found in small streams of the fall line and has been collected in Winston County. *Rhyacophila carolae* has been collected in a small tributary of Bee Branch in the Bankhead National Forest. Caddisflies are confined to water during the majority of their life cycle. Adults of most species are inactive during the day and active during the evening (Harris et al., 1991).

No impact is anticipated as these are aquatic species. In most instances the fire does not get into riparian areas to any large extent. Streamside management zone guidelines will be followed for construction of fire lines on every tract. In these instances, heavy equipment will not be utilized in the construction of fire lines within close proximity to streams. Thus, direct physical damage would be prevented. The use of hand crews to construct fire lines within these riparian areas will minimize disturbance. Erosion control efforts on constructed fire lines will be utilized where indicated to prevent, reduce or control erosion.

DARTERS

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Tuskaloosa darter is found in streams with moderate to swift flow. It will be found in cobble, gravel and slab riffles. It has been collected in Sipsey Fork, Borden Creek, Rush Creek and Capsey Creek in the Bankhead. This species was not collected during biomonitoring in the Upper Mulberry Fork Watershed, 1999-2001 conducted by Geological Survey of Alabama.

The **Warrior darter** is found in small to medium streams with moderate flow. This species will be found in rubble, bedrock, and gravel-filled pools. This species feeds on aquatic insect larvae. Warrior darter has been collected in the following creeks on Bankhead National Forest; Thompson, Borden and Sipsey Fork.

Rush darter has been collected in the Clear Creek system in Bankhead National Forest. Collection sites are characterized as relatively low gradient, small streams with sand substrate and beds of burrweed.

Tuscumbia darter is found in limestone spring ponds and runs with aquatic vegetation present. This species is especially sensitive to changes in physical habitat, such as temperature or turbidity. The **longhead darter** has been collected within the Bankhead National Forest in the Sipsey Fork.

No impact is anticipated on these aquatic species. Prescribed burning is not known to have direct effects upon fish species. In most instances the fire does not get into riparian areas to any large extent. Streamside management zone guidelines will be followed on every tract. In these instances, heavy equipment will not be utilized in the construction of fire lines within close proximity to streams. The use of hand crews to construct fire lines within these riparian areas will minimize disturbance. Thus, direct physical damage and downstream effects would be prevented. Erosion control efforts will be utilized where indicated by Forest Service personnel to prevent, reduce or control sedimentation. Past efforts on the district have proven effective to control soil erosion.

ALABAMA SPIKE, SOUTHERN CREEKMUSSEL, SOUTHERN HICKORYNUT, ALABAMA
HICKORYNUT, ALABAMA RAINBOW, PURPLE PIGTOE, RIDGED MAPLELEAF, AND ALABAMA
HEELSPLITTER

Potential habitat for most of these aquatic species exists on Bankhead National Forest. All of these mussel species require habitat stability, including substrate and water quality. These species are sensitive to water quality degradation; siltation being an important factor. Ground disturbing activities within a watershed are potential sediment sources.

Several of these species have been collected in the northern portion of the district, including the Alabama Spike, Southern Creekmussel and the Alabama Rainbow (McGregor, 1992). Population data on the purple pigtoe, ridged mapleleaf and the Alabama heelsplitter is lacking.

No impact is anticipated on these aquatic species. Prescribed burning is not known to have direct effects upon fish species. In most instances the fire does not get into riparian areas to any large extent. Streamside management zone guidelines will be followed for construction of fire lines on every tract. In these instances, heavy equipment will not be utilized in the construction of fire lines within close proximity to streams. Thus, direct physical damage would be prevented. The use of hand crews to construct fire lines within these riparian areas will minimize disturbance. Erosion control efforts on constructed fire lines will be utilized where indicated to prevent, reduce or control erosion.

RAFINESQUE'S BIG-EARED BAT

This mammal uses abandoned buildings and large hollow trees as sites for nursery colonies.

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According to E. D. Pierson, this species may form roosts under loose sloughing bark of dead and dying trees, in addition to roosts formed in tree cavities (1998). It hibernates in old mines, caves, cisterns and wells in the northern part of its range. According to Best et al., this species usually is not found hibernating in caves in the southern part of its range (1999). The range of this species approximates the historical range of the great cypress swamps, indicating that it may have relied on these sites for roosting and foraging (Bat Conservation International 2001). Prescribed burning is not expected to damage habitat for this bat. Fire line construction activities generally avoid habitat features such as caves, wells and cisterns. It has not been found on Bankhead National Forest in monitoring efforts conducted to date (2004). *No impact* is anticipated to this species.

SPREADING YELLOW FALSE FOXGLOVE

This species has been encountered in Cherokee County and has not been found on Bankhead. Other species of *Aureolaria* are found on a variety of sites from upland hardwoods to sandy sites of the coastal plain. This particular species has only been found on river bluffs in Tennessee but is not known to occur in Bankhead. *No impact* is expected, as this species

SMALL-FLOWERED BUCKEYE, BUTTERNUT and BRYSON'S SEDGE

Buckeye is found in rich mesic woods and along creek margins. It was not encountered during field surveys. Appropriate habitat does exist within the proposed burn areas. Prescribed fire is typically less intense within this type of habitat and often does not reach stream margins. Fire lines within these areas will be constructed by the hand tool method.

Bryson's sedge is found in rich, mesic deciduous woods, shaded slopes above streams or on bluffs above streams. It is relatively a newly identified plant (1993) and little is known about its life science. It is known from only two locations on the Bankhead National Forest. Neither of these locations are proposed for treatment through this prescribed burning project. Other sedges which occur in similar locations on Bankhead do not appear to be negatively impacted by prescribed fire. This was not found during surveys of proposed burning sites nor in proposed fire lines. *No impact* is anticipated.

Butternut is found primarily on, but not limited to, limestone-derived soils, heavy clay-like soils associated with floodplain woods, or calcareous mesic woods. Butternut is found in rich hardwoods and streamside margins, especially in calcareous alluvial depositions along the streams. A low intensity burn is expected to have *no impact* on this species. Equipment restrictions within streamside management zones will also protect individuals from impact during fire line construction. *No impact* is anticipated.

WHITE-FRINGELESS ORCHID

This species is associated with, but not limited to, low wet woods or areas that commonly fall into streamside management zones. For survival, it requires mesic conditions and at least partial shade. This species is not limited to a particular soil type. The white-fringeless orchid is found in bogs, seepage slopes, spring seeps or swamps. It grows in association with red maple, tulip tree, white oak, sweet bay, black gum, lady fern, royal fern, cinnamon fern, yellowroot and sphagnum moss. These habitats may be found in riparian areas or in the uplands. Surveys conducted on project areas found this species on one burn unit. This area was noted, flagged and the fire line routed around the area. Riparian areas, seeps, swamps, and bogs are typically not the areas where prescribed fire reaches. Heavy equipment used for fire line construction will not operate within the streamside management zones or wetlands. *No impact* is anticipated to this sensitive species.

SWEET PINESAP

Sweet Pinesap is associated with mixed xeric forests. This small saprophytic plant is noted to be found in dry sandy (acidic) woods and in pine and mixed pine/hardwood stands. It is apparently most often found under pines, giving rise to the common name. It has been reported as being saprophytic on pine roots and the bases of

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pine trees. It has been reported to occur in mixed deciduous hardwood pine stands also. In the south, it occurs in the mountain foothills and piedmont areas. The Nature Conservancy, Alabama Heritage Program has an agreement with the Forest Service to locate and identify individuals of this species on the Bankhead National Forest. Areas with historical records of occurrence have been re-visited to confirm presence or absence through this agreement. Despite past records of occurrence, it has not been located in subsequent field searches.

This species was not encountered during pre-project surveys, which were conducted during a known flowering period. Any species encountered through additional surveys and monitoring will be identified and protected from the direct impacts of equipment during fire line construction, site preparation or thinning. Small, non-descript and unknown populations may exist within areas to be treated. Burning activity will occur during a period while this plant is dormant. *No impact* is anticipated to this species.

JEWELED TRILLIUM

Jeweled trillium is associated with mixed mesic forests. This species has been reported within the Bee Branch area of the Bankhead National Forest. The habitat of this plant is described as rich coves under mature trees, in rhododendron thickets along streams, and at forest edges. The plant is associated with moist, rich sites. This species was not encountered during field surveys conducted as a part of this prescribed burn project, but potential habitat is present within the project area. Prescribed burning could directly impact individuals if they were present during the application of fire. It is anticipated that most of the burning during the early season (December and January) would not seriously impact this species. Burns conducted later in the season might top-kill some individuals or local populations. The exact timing and intensity of the fire would have a direct bearing upon the mortality. Burning could product beneficial effects if conducted during dormant periods. Although no plants were found during field survey work, the project could damage randomly occurring, isolated plants but will not cause a trend to federal listing or a loss of viability.

Fire line construction areas were surveyed and this plant was not found. *No impact* is anticipated.

GORGE (TAYLOR'S) FILMY FERN

This fern is somewhat to very epipetric in that they are usually found on more or less vertical rock faces. Gorge filmy fern grows on moist bluff faces. These sites will not be disturbed during prescribed burning or line construction activity. Surveys performed on project areas did not indicate the presence of this species in areas to be disturbed. Fire will not be expected to reach the areas where this plant is found. *No impact* on this species is expected, as the prescribed burning activities are not located within this type of habitat.

RIVERBANK BUSH-HONEYSUCKLE

This species is found in riparian areas along streams. It was not encountered during field surveys. *No impact* is expected, as streamside management zone guidelines will be adhered to. It will not be impacted by fire line construction, as hand lines will be used within areas of potential habitat for this plant.

LANCELEAF TRILLIUM

This species prefers moist alluvial soils and thrives in floodplains, although it has been rarely observed growing in rocky upland woodlands and brushy thickets. This species was not encountered during field surveys conducted as a part of this prescribed burn project. Prescribed burning could directly impact individuals if the fire reached them. However fire intensity is often reduced within floodplains and riparian areas and often fire

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does not reach these areas. Thus, there would be little chance for fire to produce damage to these plants. Fire line construction activity within this habitat would be by hand tools and thus not damaging to the species. *No impact* is anticipated.

BROADLEAF BARBARA'S BUTTONS

This species habitat is described as pinelands and damp woods. There are no records of this plant ever being found on Bankhead National Forest. Although this species was not encountered during field surveys conducted as a part of this project, potential habitat is present within the project area. Prescribed burning and the construction of fire lines could directly impact individuals if they were present, however no populations or individuals have been found here. *No impact* is anticipated to this species.

PINNATE-LOBED BLACK-EYED SUSAN

This species habitat is described as riparian areas associated with rock outcrops and cliffs. This species was not encountered during field surveys conducted as a part of this project, however potential habitat is present. Riparian areas associated with rock outcrop and cliff habitats are generally impacted by either very low intensity or no fire during a prescribed burn. Intense fire does not generally burn into these areas. *No impact* is anticipated to this species.

DIANA FRITILLARY

This butterfly is described as a woodland species that is associated with stream habitat. Forest Service records do not indicate this species presence on the Bankhead National Forest, but potential habitat is present. There are no known records of this species ever being found on the forest.

Streamside management guidelines and riparian area protections will mitigate the potential for any impacts on this butterfly's habitat. *No impact* is anticipated to this species.

DUCKRIVER BLADDERPOD

This species is known to occur in Franklin and Marshall counties in calcareous fields and pastures. It has not been encountered within the Bankhead National Forest and is not expected to occur within the project area. *No impact* is anticipated as the appropriate habitat does not exist within the project area.

YELLOW FRINGELESS ORCHID

This species is known to occur in bogs in Winston County. This plant was encountered during the field surveys on one burn unit. The area was noted, flagged and the fire line routed around it. Fire would typically not burn into this habitat as it is too moist. *No impact* is anticipated as the construction of fire lines will avoid bogs.

ALABAMA SNOW-WREATH

No impact is expected on this species, as it is known to occur in limestone woodlands and on bluffs. Fire intensity near bluffs is typically reduced, thus prescribed fire would not likely damage the plant. The areas of habitat for this species are avoided by heavy equipment during fire line construction thus, no damage is anticipated from fire line construction. This species has not been recorded in Winston County. It has been recorded from DeKalb, Jackson, Madison, and Tuscaloosa counties. *No impact* is anticipated.

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ALABAMA SKULLCAP

This species is known to occur in Calhoun, Cullman, Etowah, Jefferson and St. Clair counties. It is associated with moist clearings and glades in oak-pine flats. Although prescribed fire may cross glades, its impact to this plant during the dormant season is not known. Normally fire does not cross rock outcrops such as glades. Glades are avoided during fire line construction. This project is expected to have *no impact* on this plant.

BLUE RIDGE CATCHFLY

This species is associated with cliffs, rock barrens, sandstone outcrops and rock houses. Although it has been recorded from Dallas County, potential habitat does exist on the Bankhead National Forest. Fire intensity near rock outcrops is typically reduced or non-existent, thus prescribed fire would not likely damage the plant. The areas of habitat for this species are avoided by heavy equipment during fire line construction, thus no damage is anticipated from fire line construction.

No impact is expected on this plant, as potential habitat will not be affected by the project. This plant was not encountered during field surveys.

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Table #6. Determination of Effects Table: Terrestrial Sensitive Species

Common Name	Scientific Name	Effect
Small flowered buckeye	<i>Aesculus parviflora</i>	No Impact
Tennessee Milkvetch	<i>Astragalus tennesseensis</i>	No Impact
Spreading yellow false foxglove	<i>Aureolaria patula</i>	No Impact
Bryson's sedge	<i>Carex brysonii</i>	No Impact
Alabama larkspur	<i>Delphinium alabamicum</i>	No Impact
Riverbank bush-honeysuckle	<i>Diervilla rivularis</i>	No Impact
Gorge filmy fern	<i>Hymenophyllum tayloriae</i>	No Impact
Butternut	<i>Juglans cinerea</i>	No Impact
Alabama Gladecress	<i>Leavenworthia alabamica v. al</i>	No Impact
Common Name	Scientific Name	Effect
Fleshy-fruit Gladecress	<i>Leavenworthia crassa</i>	No Impact
Duck River Bladderpod	<i>Lesquerella densipila</i>	No Impact
Sweet pinesap	<i>Monotropis odorata</i>	No Impact
Nevius' stonecrop	<i>Sedum nevii</i>	No Impact
White fringeless orchid	<i>Platanthera integrilabia</i>	No Impact
Yellow fringeless orchid	<i>Platanthera integra</i>	No Impact
Alabama snow-wreath	<i>Neviusia alabamensis</i>	No Impact
Alabama skullcap	<i>Scutellaria alabamensis</i>	No Impact
Blue Ridge catchfly	<i>Silene ovata</i>	No Impact
Jeweled Trillium	<i>Trillium simile</i>	No Impact
Menge's fameflower	<i>Talinum mengesii</i>	No Impact
Little mountain meadow rue	<i>Thalictrum mirabile</i>	No Impact
Clammy Locust	<i>Robina viscosa</i>	No Impact
Limestone Fameflower	<i>Talinum calcaricum</i>	No Impact
Lanceleaf Trillium	<i>Trillium lancifolium</i>	No Impact
Broadleaf Barbara's Buttons	<i>Marshallia trinervia</i>	No Impact
Diana Fritillary	<i>Speyeria diana</i>	No Impact
Rafinesque's Big-eared Bat	<i>Corynorhinus rafinesquii</i>	No Impact
Scott's Spleenwort	<i>Asplenium x ebenoides</i>	No Impact
Pinnate-lobed Black-eyed Susan	<i>Rudbeckia triloba var pinnatifida</i>	No Impact

Explanation of Determinations for Sensitive Species

Possible Determinations and the Needed Follow-up Actions – The four possible determinations of effects are:

1. “no impact”,
2. “beneficial impact”,
3. “may impact individuals, but not likely to cause a trend to federal listing or loss of viability”,
4. “likely to result in a trend to federal listing or a loss of viability”.

All the possible effects of a proposed action should be included under one of the above determinations. There is no need to consult with the FWS for sensitive species. No action, other than documenting the rationale, is required for determination of “no impact”, “beneficial impact” or “may impact individuals, but not likely to cause a trend to federal listing or a loss of viability”. If the determination is “likely to result in a trend to federal listing or a loss of viability”, the proposed action should be modified to avoid, minimize or rectify the impact. Sensitive species must receive special management emphasis to ensure their viability and to preclude the need for federal listing.

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Determination of Effects for Sensitive Species

The proposed activity will have no impact to species which are listed Sensitive Species as per the Regional Forester's List.

Biological Evaluation Prepared by: /s/ Tom Counts
TOM COUNTS
District Wildlife Biologist

Field Surveys and evaluations conducted by Tom Counts and Allison Cochran.

Date Signed August 6, 2005

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Note for File

Consideration of species, which are considered locally rare by the Alabama Natural Heritage Program of The Nature Conservancy.

LOCALLY RARE SPECIES

A number of other species found on the BNF are not listed by the FWS or the Regional Forester but are still of some concern and are either being tracked as sensitive by the Alabama Natural Heritage Programs or have shown signs of possible decline or other vulnerability. These have been given a global rating of G4 or G5, which indicates that they are apparently (101+ populations or 10,000+ individuals) or demonstrably secure throughout their ranges. Some parts of the ranges of these species may only have low numbers, such as peripheries. State rankings (S1-S5) have the same meaning as global rankings based on the status of a species within the state of Alabama, not the entire range. While emphasis should be given to ensuring that large populations are not eliminated from any National Forest, impacts to individuals or parts of populations will probably not lead to any trend to federal listing or loss of viability.

Evaluation of locally rare species.

LOCALLY RARE SPECIES: Terrestrial Species List

Common Name	Scientific Name	Ranking	Habitat
Green Salamander	<i>Aneides aeneus</i>	S3G3G4	7
Seepage Salamander	<i>Desmognathus aeneus</i>	S2G3G4	21
Three-corner prairie clove	<i>Dalea carnea var gracilis</i>	G5T3	6
Gattinger's prairie clover	<i>Dalea gattingeri</i>	G3G4	6
A prairie clover	<i>Dalea sp.</i>	G2	6
Little-leaved alumroot	<i>Huechera parviflora var p</i>	S3G4T3	18
Small-head gayfeather	<i>Liatris microcephala</i>	S1G3G4	19
Ginseng	<i>Panax quinquefolia</i>	S1G3G4	18
Weft fern	<i>Trichomanes intricatum</i>	G3G4	7
Blue ridge trillium	<i>Trillium stamineum</i>	G3G5	18
Wahoo	<i>Euonymus atropurpurea</i>	S1G5	18
Large whorled pogonia	<i>Isotria verticillata</i>	G5	10
Rock clubmoss	<i>Huperzia porophylla</i>	S1G4	7
Round leaved firepink	<i>Silene rotundifolia</i>	S1S2G4	7
Dwarf bristle fern	<i>Trichomanes petersii</i>	S2G4G5	7
Wild hyacinth	<i>Camassia scilloides</i>	G4G5	6
Sunnybells	<i>Schoenolirion croceum</i>	S2G4	6
Puttyroot	<i>Aplectrum hyemale</i>	S2G5	18
Dutchman's breeches	<i>Dicentra cucullaria</i>	S2G5	18
Columbo	<i>Swertia caroliniensis</i>	G5	18
Prairie Trillium	<i>Trillium recurvatum</i>	S2G5	18
Goldie's fern	<i>Dryopteris goldiana</i>	S1G4	18
Silky Camellia	<i>Stewartia malacodendron</i>	S2S3G4	18
Common Name	Scientific Name	Ranking	Habitat
Mountain Camellia	<i>Stewartia ovata</i>	S2S3G4	11
Alabama Grapefern	<i>Botrychium jenmanii</i>	G3G4 SH	8
Winter Grapefern	<i>Botrychium lunarioides</i>	G4 SH	12
White Trout Lily	<i>Erythronium albidum</i>	G5 S1S2	18
Yellow Trout Lily	<i>Erythronium umbilicatum umbilicatum</i>	G5T5 S1	18
Twinleaf	<i>Jeffersonia diphylla</i>	G5S2	18
Pinesap	<i>Monotropa hypopithys</i>	G5S2	18
Allegheny Spurge	<i>Pachysandra procumbens</i>	G4G5 S2S3	18
Wherry's Catchfly	<i>Silene caroliniana spp wh</i>	S1S2	19

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Bent Trillium	<i>Trillium flexipes</i>	S2G5	18
Toadshade Trillium	<i>Trillium sessile</i>	S2G4G5	18
Pink lady's slippers	<i>Cypripedium acaule</i>	S3G5	12
Yellow lady's slippers	<i>Cypripedium pubescens</i>	G5	18
Grass-of-Parnassus	<i>Parnassia asarifolia</i>	G4	11
Goldenseal	<i>Hydrastis Canadensis</i>		18
Royal Catchfly	<i>Silene regia</i>	S2G3	6
Nestronia	<i>Nestronia umbellula</i>	S2G4	19

Key to Table - Habitat Associations

- | | |
|--|--|
| 1= Cave Habitats | 11= Forest Riparian Habitats |
| 2= Wetland (Bog) Habitats | 12= Habitat Generalist |
| 6= Glades, Prairies & Woodland Habitats | 13= Area Sensitive Mid-&Late-Successional
Deciduous Forest Habitats |
| 7= Rock Outcrop and Cliff Habitats | 17= Southern Yellow Pine Forests & Woodland |
| 8= Grass/Forb Habitats | 18= Mixed Mesic Forest Habitats |
| 10= Mid to Late Successional Deciduous Forest Habitats | 19= Mixed Xeric Forest Habitats |
| 11= Forest Riparian Habitats | 20=Shrub/Seedling/Sapling Habitats |
| 12= Habitat Generalist | 21=Seeps and Springs |

A list of aquatic Forest Service Locally Rare species known, or suspected, to occur, on or near the Bankhead National Forest follows:

FOREST SERVICE LOCALLY RARE SPECIES: Aquatic Species

Species	Status
Bandfin darter <i>Etheostoma zonistium</i>	S1G3G4
Flame chub <i>Hemitrema flamma</i>	S3G4
Delicate spike <i>Elliptio arctat</i>	S2G4Q
Alligator Snapping Turtle <i>Macrolemys temminckii</i>	RS3G3G4
Blueface darter <i>Etheostoma sp cf. zonistium</i>	Locally Rare

Some species are of concern although not listed as threatened or endangered by the FWS. They have been ranked Globally as G1, G2 or G3 by the Natural Heritage Network of The Nature Conservancy, which means viability concerns throughout their entire range. This may be due to habitat requirements, range limits or particular vulnerability to activities. These species have been listed by the Regional Forester as Sensitive and require special consideration in order to ensure that viability is not impaired and to preclude any trend toward the necessity of their being proposed for listing as threatened or endangered by the FWS. According to the Natural Heritage Network rankings, G1 species are critically imperiled globally because of extreme rarity (typically less than 6 occurrences, less than 1,000 individuals or very few remaining acres) or because of some factor(s) making them especially vulnerable to extinction. Species ranked G2 are imperiled globally because of extreme rarity (typically 6-20 occurrences, 1,000 to 3,000 individuals or few remaining acres) or because of some factor(s) making them very vulnerable to extinction. Species ranked as G3 are rare or uncommon (typically 21-100 occurrences or 3,000 to 10,000 individuals) throughout its range; or found locally, even abundantly, in a restricted range (e.g. in a single state or physiographic region); or vulnerable to extinction throughout its range because of specific factors. Rankings begin with a T instead of a G are used for subspecies and two rankings together, such as G2G3, indicates uncertainty in the ranking of that species. A question mark (?) indicates some doubt concerning the status of the species or subspecies. Rankings preceded by an S indicate the status inside the state of Alabama as determined by the Alabama Natural Heritage Program. The list of plant and animal species is based upon the Southern Region Sensitive Species.

LOCALLY RARE SPECIES

GREEN SALAMANDER AND SEEPAGE SALAMANDER

Seepage salamanders are found within damp, but not wet leaf beds and root masses on the forest floor near springs, seeps, streams and rock houses. This species is found in shaded, moist deciduous or semi-deciduous ravines. Green salamanders are found within damp, but not wet, crevices in shaded rock (sandstone) outcrops, bluffs and ledges. This species is also found in hardwood coves under the bark and in cracks of rotting trees, and stumps. It may be found in pine uplands, particularly Virginia pine and white-pine hemlock with mountain laurel in the understory.

Neither of these species were encountered during field surveys. Prescribed fire will typically not impact these areas. Fire line construction avoids these areas. No impact is anticipated.

THREE-CORNER PRAIRIE CLOVER, GATTINGER'S PRAIRIE CLOVER AND A PRAIRIE CLOVER

These species are known to occur in glades however none of them are known from the Bankhead National Forest. One species, *Dalea* sp., is known to exist approximately one mile north of the Bankhead National Forest. Some glade areas may occur within the areas proposed for prescribed fire operations. Encroachment of shrubs and trees around glades can be controlled by the use of fire and is considered to be beneficial to the glade ecosystem. It is important to avoid vehicular traffic during burning activity. Fire line construction avoids these areas. No impact is anticipated.

LITTLE-LEAVED ALUMROOT

This species occurs in mesic hardwood coves and in riparian areas.

No impact to this species is expected from this project as this habitat does not typically burn during prescribed burn operations. Riparian areas will be protected through the established guidelines for streamside management zones. Equipment will avoid these areas during fire line construction.

SMALL-HEAD GAYFEATHER

This species is found on sandstone and in dry barrens. It is also described as occurring in old fields, meadows and clearings. It was not found during site surveys although it could exist indiscreetly within remote areas of a prescribed burn site. Small populations of this plant could be impacted by prescribed burn operations. This plant was not found during surveys of areas proposed for fire line construction. Heavy equipment will avoid rock outcrops of sandstone.

WEFT FERN

This fern is found in rock houses and spray cliffs. This species was encountered during field surveys although potential habitat is present within several burn areas. Prescribed fire typically does not reach rock houses, thus this plant would not be impacted by the fire. Fire line construction avoids these areas, thus no damage would be anticipated to occur from this activity. This species has not been recorded in the Bankhead National Forest. Suitable habitat will not be affected by this project.

WAHOO, GOLDENSEAL, PUTTYROOT, DUTCHMAN'S BREECHES, BLUE RIDGE TRILLIUM, PRAIRIE TRILLIUM, COLUMBO AND GINSENG

These plants are found primarily on, but not limited to, limestone-derived soils, heavy clay-like soils associated with floodplain woods or calcareous mesic woods. Wahoo occurs along stream banks and in rich mesic woods. Goldenseal is found in mostly mature deciduous woodlands, usually in rich soils over limestone. Puttyroot is found in heavy soils of floodplains and low rich woods. Dutchman's breeches is found in rich woods, north

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facing slopes and stream banks. Blue ridge trillium is found in rich mesic woods, occurring on heavy clays in the floodplains of small streams. It is often found in association with red buckeye. Prairie trillium is found in rich mesic woods on slopes, along streams and in floodplains, often associated with mixed or loamy/clay soils. Columbo is found in rich woods on cool slopes in mesic areas or open woodlands. Ginseng is found on rich mesic slopes, alluvial deposits, and in hardwood coves.

None of these plants were found during field surveys. Although the prescribed fire may burn through habitat for these species, it is not anticipated that the fire will severely damage the overall populations of these species. Some individuals may be top-killed but the root should survive and resprout. Fire line construction typically avoids the areas where these plants are found. Hand lines may be constructed through these habitats but should cause little or no damage to them.

WHERRY'S CATCHFLY and ROYAL CATCHFLY

Wherry's catchfly is found in sandy, rocky upland woods with calcareous soils. The royal catchfly is also known from dry woods, prairies and rocky openings in well-drained calcareous or cherty soils. Neither of these species was encountered during field surveys. Potential habitat is available within the proposed project area. Isolated populations of these plants could be impacted by a prescribed fire. It is not expected that damage to isolated individuals would result in overall population declines. Surveys for constructed fire lines did not find these plants. These are not known to occur on Bankhead National Forest although potential habitat exists here.

PINK LADIES SLIPPER

This species is most often associated with mesic woods habitat. Only a few sightings of Pink Ladies Slipper are recorded on Bankhead. It is not known to occur within the proposed tracts. No negative impact is expected for this species as the project should avoid its habitat.

YELLOW LADY'S SLIPPER

This species is found in bogs, swamps, and woodlands. Individuals have been recorded in the Bankhead National Forest, and within one burn unit. Damage to the habitat for this plant will be avoided by this project and be protected from equipment damage by streamside management zones. No impact is anticipated.

GRASS-OF-PARNASSUS

This plant is found in bogs and springs and on wet slopes. This species was not encountered during field surveys and appropriate habitat will not be impacted by the project.

LARGE WHORLED POGONIA

This plant is found in acid woods, both moist and dry. It is also found along stream margins. Habitat for this species likely occurs within some of the burn units although site specific surveys did not locate this plant. It is expected that fire would not likely reach the moist areas where this plant usually is found. In the event that it did so, it is likely that the root would be intact and resprout.

Fire line construction will avoid the habitat for this plant. No impact is anticipated.

NESTRONIA

This species is most often associated with mesic woods and rocky dry woods habitat. It can occur in pine stands on dry sites, and most often occur in the dry xeric upland oak/hickory/shortleaf pine overstory community types. There are numerous colonies of Nestrtonia on the Bankhead National Forest and this particular plant has shown vigorous resprouting and vegetative growth after disturbance from fire and some logging operations. It is a nondescript plant and sometimes found in small, isolated groups. This plant is documented to occur on several burn units and was found during field surveys. Fire line construction was routed around these plants which were found during surveys. There is some potential that individual populations of this plant may be impacted by the

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burning but it would not lead toward a federal listing of the species or result in a loss of viability for the species. Prescribed burning has been found to not damage this plant. Fire line construction will avoid this plant. No impact is anticipated.

ROCK CLUBMOSS, ROUNDEAVED FIREPINK AND DWARF BRISTLE FERN

These plants are associated with sandstone outcrops or cliffs. The clubmoss is found in shaded crevices, cliffs and ledges of sandstone. The firepink is found in crevices of dry sandstone cliffs and ledges, at or near the bluff line, in full to nearly full sun. The bristle fern is found on shaded moist rocks (epipetric) of sandstone cliffs and overhanging ledges, and large shaded boulders and sometimes on the bases of tree trunks. There will be no impact to these species, as the proposed project will not impact these habitats. Fire will not burn within these rock areas and fire line construction avoids them.

WILD HYACINTH AND SUNNYBELLS

Sunnybells are most often associated with well-drained, sandy soils, and with pinelands or cedar glades. There is usually a surface to subsurface water flow in connection with these sites, although it may only be seasonal. The hyacinth is associated with cedar glade woodlands, and also with low-lying calcareous alluvial deposit first terrace riparian micro-sites. Some glade areas occur within the areas proposed for prescribed fire operations. Encroachment of shrubs and trees around glades can be controlled by the use of fire and is considered to be beneficial to the glade ecosystem. It is important to avoid vehicular traffic on glades during burning activity. Fire line construction avoids these areas. No impact is anticipated.

SILKY AND MOUNTAIN CAMELLIAS

These are understory shrub species. These two camellias are very similar in appearance. The mountain camellia, is found in moist rich soils along stream margins. The silky camellia is found in moist rich woods. The silky camellia was not found during field surveys of the proposed burn units although they are not uncommon in the landscape. They are primarily located within the stream side management zones and along moist rocky bluffs. Any undiscovered plants will not be impacted by the project, as streamside management guidelines are in place and the proposed project should not occur within these areas. Fire line construction will avoid these areas as only hand tools will be used in potential habitat areas for these plants. No individual plants of these species should be impacted by this project.

GOLDIE'S WOOD FERN

Goldie's wood fern is a terrestrial species, found in damp woods and on stream banks. Its habitat is among rocks and it is occasionally epipetric at the base of cliffs. It is not expected to be found in the Bankhead National Forest. These habitats are not expected to be impacted by the proposed project.

ALABAMA GRAPEFERN and WINTER GRAPEFERN

Alabama grapefern is found on wooded slopes with loamy, subacid soil and in old fields. In Tennessee, it has been encountered in wet pinelands, ravines and dry hillsides underneath pines. The winter grapefern's habitat is described as sandy slopes of dry, open woods with subacid soil and in old fields. Potential habitat for these two species exists in some of the burn units. Neither species has been recorded from Bankhead, nor were they encountered during field surveys. While individuals may be impacted by this project, there should be no loss of populations that would result in a trend toward federal listing.

WHITE TROUT LILY and YELLOW TROUT LILY

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The white trout lily is very rare in Alabama. According to Dean et. al, it is only known from one limestone hillside in the Tennessee Valley and from Cullman County. It has not been encountered in Bankhead National Forest.

The yellow trout lily is found in alluvial woods and rich, moist deciduous woodlands, coves, ravines and along streambanks. The more common trout lily, *Erythronium rostratum*, is frequently encountered in the Bankhead National Forest.

Potential habitat for these two species exists in some of the burn units. Although neither were they encountered during field surveys, they are nondescript shortly following flowering in the spring. Known locations are often too damp to carry a fire. Fire lines will only be constructed with hand tools within riparian areas and along streams, where this plant is typically found. While individuals may be impacted by this project, there should be no loss of populations that would result in a trend toward federal listing.

TWINLEAF

Habitat for this species is described as rich, damp, open woods. This species was not encountered during field surveys. No negative impact is expected for this species as the damp habitat of this species should not be impacted by fire or by fire line construction.

PINESAP

This species may be found in upland, moist woods. It was not encountered during field surveys for this project. Potential habitat is present within the proposed burn units. While individuals may be impacted by this project, there should be no loss of populations that would result in a trend toward federal listing.

ALLEGHENY SPURGE

This species is found in mesic hardwood forests over limestone. It is known to occur within Bankhead National Forest, but was not encountered during field surveys for the proposed project. Potential habitat is present within the project area. While individuals may be impacted by this project, there should be no loss of populations that would result in a trend toward federal listing.

BENT TRILLIUM and TOADSHADE TRILLIUM

Bent trillium is known to occur on rich wooded slopes, over limestone-derived soils, in stream valleys, on upper alluvial plains, and in rich woods on higher floodplains. Toadshade trillium is also found in rich woodlands, over limestone and calcareous soils, in floodplains, and on riverbanks. This species has also been encountered in high, dry limestone woods.

Both of these species occur on Bankhead National Forest. Neither was encountered during field surveys for the proposed project. While individuals may be impacted by this project, there should be no loss of populations that would result in a trend toward federal listing.

Aquatic Locally Rare:

ALLIGATOR SNAPPING TURTLE

Alligator snapping turtles are associated with deep rivers and canals primarily, but may be found in lakes and swamps that are located in close proximity to deep water. This is an aquatic turtle, which emerges for nesting purposes. This species requires fish and mollusk populations for feeding and undeveloped areas for nesting. This project will not affect the habitat of this species. No turtles were encountered during the field surveys.

BANDFIN DARTER AND FLAME CHUB AND UNDESCRIBED BLUEFACE DARTER

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The Bandfin darter and Flame chub are both common species in the lower Tennessee drainage; the darter in Kentucky, Mississippi, Tennessee and northwest Alabama, including Bear Creek on the BNF and the chub in Tennessee and north Alabama. The darter, however, has only one known population in the Mobile drainage. It is found in Hubbard Creek and its tributaries above Kinlock Falls on the BNF. The species has been collected in Hubbard, Basin, Whitman and Maxwell Creeks. Dycus and Howell (1974) suggested that the species entered the Hubbard Creek drainage by stream capture or some other method from nearby Bear Creek in the Tennessee drainage. Kinlock Falls and competition from other fish may have hindered its distribution out of Hubbard Creek. The Bandfin darter in the Tennessee drainage inhabits coastal plain streams with low gradients and fine gravel to sandy substrates. In the Mobile drainage, the species inhabits cool streams with abundant areas of boulder and bedrock substrates. This darter is common throughout most of its range, but it was listed as a Locally Rare Species because it has such a limited distribution in the Mobile drainage. The flame chub is found in springs and small spring fed streams in the Tennessee River drainage. On the Bankhead NF it is known from tributaries of Flint Creek. The undescribed blueface darter is known from the Black Warrior and Tennessee drainages. At this time, the habitat has not been described in literature.

No impact is anticipated on these aquatic species. Streamside management zone guidelines will be followed on every tract to mitigate potential sedimentation. Direct physical damage to individuals and habitat (substrate) will also be prevented through implementation of streamside management zones and riparian area identification. Erosion control efforts will be utilized by FS personnel to prevent, reduce or control erosion on upland sites as an additional mitigation measure.

DELICATE SPIKE AND ALABAMA HEELSPLITTER

The Delicate spike is found in small to medium headwater streams. It has been recorded in Blount, Cherokee, DeKalb, Jefferson, Macon, and Tuscaloosa counties. It has not been collected in the Bankhead National Forest. The Alabama heelsplitter is found in large rivers and is known from the Cahaba River, downstream of Oakmulgee. It has been recorded in Blount and Jefferson counties. It has not been collected in the Bankhead National Forest.

Mussel species will not be impacted by this project, as appropriate guidelines are in place regarding streamside management zones. Additionally, neither of these species is expected to occur in the project area.

Mitigation Measures

Measures to mitigate any potential damage to habitat of threatened, endangered, sensitive or locally rare species of plants or animals include active and passive ones. Biological staff was involved in all aspects of project planning. All sites have streamside management zones and the related protection guidelines in place, thus no indirect or cumulative effects are anticipated downstream. Any constructed fire line that has significant potential for producing soil erosion will be rehabilitated with appropriate erosion control measures.

All areas where locally rare species were found during the field surveys have been identified within the proposed burn units. These areas will be identified during project activity planning phase and will be protected as needed to protect the species throughout the project.

Determination of effects for locally rare species

The activity is not expected to have an impact upon locally rare species. While some individual plants within the proposed project areas may be affected, these impacts to individuals or parts of a population will probably not lead to any trend toward federal listing or loss of viability.