

**BIOLOGICAL EVALUATION FOR R-9 REGIONAL  
FORESTER SENSITIVE SPECIES  
IN THE MIDDLE RIVER PROJECT AREA  
U.S.D.A. FOREST SERVICE  
MARK TWAIN NATIONAL FOREST  
HOUSTON/ROLLA/CEDAR CREEK RANGER DISTRICT  
CALLAWAY COUNTY MISSOURI**

**INTRODUCTION**

The National Forest Management Act (NFMA) regulations of 36CFR 219.19 specify that fish and wildlife habitat will be managed to maintain viable populations of existing native and desired non-native species. This requirement is further developed in Chapter 2670 of the Forest Service Manual, which establishes a “Sensitive” category to include animal, plant, and fish species in addition to indicator species whose viability is a concern to the Forest Service. The objective is to ensure that these species do not become threatened and endangered because of Forest Service actions. The February 29, 2000, Forest Service R-9 Regional Forester Sensitive Species (RFSS) list is utilized. *Note: Additional information is contained in the Wildlife, Fisheries and Plant write-up in Chapter III of the Middle River Environmental Assessment.*

**AREA AFFECTED**

**Project Location:** The Middle River Project Area lies within the 43,374 acre Middle River (10300102240002) watershed. The Middle River Project Area contains 1,296 acres of Forest Service System lands. It is characterized by broad flat ridge tops, gently rolling topography and some steep bluffs overlooking Middle River itself. It predominately contains hardwoods and numerous openings.

The project is located in Township 46 North, Range 10 West sections 13, 15, 24, 25 and 36, Fifth Principle Meridian in Callaway County Missouri. It is located approximately 5 air miles Southwest of Fulton Missouri.

**Management Areas:** 3.4.

**Project Area Size:** 1,296 acres.

**LTA's in Project Area:** Middle River Breaks portion of the Oak Hickory Hills LTA (HO).

**Latitude/Longitude:** 38 degrees 45' 57" North and 92 degrees 00' 50" West.

**U.S. Geological Survey Quadrangle (Topographic) Map(s):** Fulton, Guthrie, Mokane West and New Bloomfield.

## PROPOSED ACTION & ALL OTHER ALTERNATIVES

*Note: All acreages are approximations.*

### **Alternative 1 (No Action):**

This alternative provides a baseline (reference point) against which to describe the environmental effects of the action alternatives. This is a viable alternative and responds to the concerns of those who want to keep the present openland management in place, but no additional activities would take place. The option for future management in this area would not be foreclosed.

The amount of existing openland (475 acres) would continue to exist in the area (which exceeds LRMP Desired Future Conditions objectives). Open land would not be planted to hardwood species and/or prescribed fire would continue to be utilized to keep areas in open/semi-open habitat.

If Alternative 1 is selected, current and on-going management activities would continue, but no new federal management activities would be initiated. However, no new old growth would be designated given that no project activities would be implemented. Changes, such as road maintenance, might occur through current management direction, natural processes, or other management decision in the future.

### **Alternative 2 (The Proposed Action):**

This alternative includes the projects proposed through scoping. This alternative responds to the need to enhance wildlife habitats, improve watershed health and improve recreation. Below is a summary of actions that would occur in Alternative 2:

#### Enhance Wildlife Habitat

Maintain existing open/semi-open habitat on 400 acres through mowing, prescribed fire, and grazing

Designate an additional 107 acres for old growth wildlife species.

Create woodland habitat in oak, oak-pine and pine sawtimber with 20-30% forbs, grass, and shrub on 460 acres through uneven-age harvests; contribute to this habitat on 250 acres by prescribed burning.

Create 69 acres of 0-9 age class habitat through a portion of the preceding treatment.

Provide diverse amphibian habitat through breaching and lowering one pond.

*Note: all or portions of some of the acres may be treated with fire more than once in the following decade.*

#### Watershed Health Actions

Restrict livestock from wooded acres by fencing.

Reconstruct one pond and fence it to restrict cattle.

Reconstruct approximately .9 mile of Forest Road 1686 to improve drainage crossing.

Improve access in pastures with gravel  
Close approximately .4 miles of non-system roads which exist in the project area.  
Reduce soil movement in three wooded draws by planting native vegetation or installing watershed control structures.  
Close 2 existing open wells  
Plant hardwoods and restrict prescribed burning on 75 presently openland acres.  
Maintain existing ponds

#### Recreation Management

Improve five parking lots with gravel  
Construct interpretive cultural history signs.  
Install self-closing gate to improve access for dispersed recreation.

#### Associated or Connected Action

Construct fire lines for prescribed burns.  
Reduce non-native invasive and noxious weeds with herbicide spot treatment on 59 acres.  
Reduce hardwood planting competition on 40 acres by spot treatment with herbicides to improve seedling survival.

#### **Alternative 3 (The Preferred Alternative):**

This alternative looks identical to alternative 2 in all aspects except some changes to several stands where individual and group harvests (uneven-age management) and connected actions would occur, reduces hardwood tree planting because an open field would be left open to grazing, and includes changes in stands proposed for old growth habitat.

Changes from Alternative 2 (the Proposed Action) include:

- Include 438 Acres proposed to maintain existing open/semi open habitat and native ecosystems (leaving existing openlands available for grazing open)
- Would include 37 acres of planting hardwoods and/or restricting prescribed burning (removal of one stand that would be left open for grazing)
- Would include some changes in stands proposed for old growth, but would keep total old growth to 189 acres.

#### **Database, Reference Material and Survey information:**

This section contains information that applies to all wildlife, fish and plant species and/or their habitat. In partnership with Mark Twain National Forest and others, the Missouri Department of Conservation has been very aggressive in conducting species surveys and maintaining data on both listed and common species.

#### **Databases:**

The Missouri Heritage Database not only includes specific locations of plant and animal species, but also includes occurrences of unique and/or rare natural communities. Many of these communities are suitable habitat for Federal Threatened and Endangered

Species (T&E), and/or Regional Forester's Sensitive Species (RFSS). The Missouri Department of Conservation Heritage Survey database is where all occurrences of terrestrial and non-terrestrial species in Missouri are officially documented.

The Missouri Department of Conservation maintains the Missouri Fish and Wildlife Information System (MOFWIS). MOFWIS contains information on over 700 species that are found in the State of Missouri. It includes information on numerous TE, RFSS, State of Missouri Endangered species, State of Missouri species of concern and other species. The information includes, but is not limited to a species documented sighting records, counties of occurrence, their life history, habitat requirements, effects (beneficial/adverse) from various activities and references.

The above two databases provide an excellent and up-to-date information source for numerous species. The Mark Twain National Forest contributes to and utilizes information from these database's. *Note: The two above sites can be accessed at [www.conservation.state.mo.us/nathis/](http://www.conservation.state.mo.us/nathis/).*

#### **Reference material:**

Species' experts in Missouri have also been very aggressive in publishing excellent reference material that include specific species information such as their locations in the state and their habitat needs. The publications include: *Missouri Wildflowers, Missouri Orchids, Field Guide to Missouri Ferns, Walk Softly Upon the Earth (lichens and mosses), Steyermark's Flora Of Missouri, Flora of Missouri, Volume 1, Butterflies and Moths of Missouri, The Crayfish of Missouri, The Fishes of Missouri, Naiades of Missouri, Birds of Missouri, and The Amphibians and Reptiles of Missouri*. These publications were utilized during the preparation of the following sections, including the evaluation of potential effects to the numerous species and/or their habitats in the Middle River Project Area.

The Mark Twain National Forest prepares the Wildlife, Fish, and Rare Plants (WFRP) Monitoring Report that includes information on trends of habitats, Management Indicator Species (MIS), and T&E species.

In March 2001 the Mark Twain National National Forest completed a Supplemental Information Report (SIR) to the LRMP on Salamanders. In June 2001 the Mark Twain Nation National Forest completed a SIR to the LRMP for the February 29, 2000 Regional Forester Sensitive Species list. Information from both of these SIR's was also utilized.

The Nature Conservancy maintains Element Stewardship Abstracts and Element Global Rankings that give specific information on species' locations, habitats, threats, propagation, life history, etc. These data sources were also consulted when analyzing potential effects of project implementation. The Nature Serve database can be accessed at [www.natureserve.org](http://www.natureserve.org).

#### **Surveys:**

Botanical surveys were conducted on the Houston/Rolla/Cedar Creek districts during the 1990's. Spring-fall Mist netting of bats were conducted on the Mark Twain National Forest in 1997, 1998, 1999, 2001 and 2002. Bat surveys were conducted in the summer of 2003 in the Middle River Project Area.

The Missouri Department of Conservation had two fish sample sites within several air miles of the Middle River Project area.

In addition to the extensive fieldwork done in preparation of the Missouri Heritage and MOFWIS databases and the publications, there are numerous field surveys conducted annually or as part of research projects in Missouri. The Mark Twain National Forest also has conducted surveys in partnership with others, or on its own. A sampling of these, include but are not limited to: Annual mid-winter eagle surveys, Forest bat surveys (cave, fall, summer, winter, mist-net, harp-trap, Anabat), Missouri Breeding Bird Atlas, Missouri Breeding Bird Survey Routes, Furbearer surveys, Cave Research Foundation Biological Inventories, Gardner and Gardner Cave Inventories, Botanical Surveys and Accipiter nest searches.

The information available on Threatened, Endangered, Proposed, and Sensitive (TES) Species locations and potential habitats in the Middle River Project Area is of sufficient quantity, quality, and relevance to make an accurate and complete analysis of potential effects on TES species in the Middle River Project Area. Enough information is available to make a reasoned management decision; therefore additional surveys are not needed for this project decision.

## **Sensitive Species Evaluated**

### **Sensitive wildlife species that are documented to occur in the Middle River Project Area:**

There are no documented RFSS species in the Middle River Project Area.

### **Sensitive wildlife species that have suitable habitat in the Middle River Breaks portion of Oak-Hickory Hills LTA and may occur in the Middle River Project Area:**

**Cerulean warbler (*Dendroica cerulea*):** The Cerulean warbler is a Neotropical Migrant Bird. The Cerulean warbler is found in oak hickory forest in bottomlands and riparian areas. The nest is built 18-60 feet off the ground. The nesting season is between May and June. This species is usually found in large tracts of bottomland forest (usually 250+ Ha.). No large tracts of bottomland forest occur in the Middle River Project area or on the Cedar Creek portion of the Mark Twain National Forest.

**Henslow sparrow (*Ammodramus henslowii*):** The Henslow sparrow spend their entire life cycle within the Continental United States. This sparrow is often found in old fields or on prairies and is known to occur in Callaway County (the Middle River Project Area

is located within Callaway County). The loss of open prairie habitat is the main reason for this species declining numbers. Nest predation, usually from small mammals or snakes and to a smaller degree from Cowbirds is a concern (Herkert 2001). In Missouri this species may be found in lightly grazed or idle prairie pastures. Prairies burned in the spring may be utilized by July.

The breeding season for this ground nester is between late April and early September. The nests are usually built at the base of grass clumps and at least 50 meters from any wooded edges. The Henslow's sparrow usually raises 2 broods per year. For breeding it usually needs areas of suitable grassland habitat larger than 30 HA and it prefers warm season grasses over cool season grasses.

### **Direct and Indirect Effects:**

#### **Cerulean warbler**

##### **Alternative 1 (No Action):**

There would be no change to the existing small amount of bottomland hardwood habitat. There would be no planting of hardwood trees in the bottomlands.

##### **Items common to all action alternatives (Alternative 2 and 3):**

The intensity of the prescribed fires is not enough to permanently alter any riparian bottomland hardwood habitat. These alternatives would plant hardwood trees on approximately 8 acres of bottomland hardwoods. No removal of forest products would occur in the bottomland hardwood habitat where this species may be found.

#### **Henslow sparrow**

##### **Alternative 1 (No Action):**

As a result of fire suppression, the existing amount of semi-open habitat would continue decline due to plant succession. Grazing which would help to maintain some of the areas openings would continue. No prescribed burning which would maintain some of the areas openings would occur.

##### **Items common to all action alternatives (Alternative 2 and 3):**

Grazing and/or prescribed burning which would help to maintain some of the areas openings would continue. While some timber harvest would occur in the area, it would not create or provide any suitable habitat for the Henslow's sparrow. *Note: None of the openings created by timber harvest are large enough to provide suitable habitat.*

##### **Alternative 2:**

Grazing and/or mowing and/or prescribed burning which would help to maintain some of the areas openings would continue, however at a reduced level. A total of 75 open acres would not be grazed or burned anymore in the future. This would allow these areas to naturally reforest themselves. Approximately 44 acres in the above openings would also be planted with hardwoods.

##### **Alternative 3:**

Grazing and/or mowing and/or prescribed burning which would help to maintain some of the areas openings would continue, however at a reduced level. A total of 37 open acres would not be grazed or burned anymore in the future. This would allow these areas to naturally reforest themselves. Approximately 8 acres (all in riparian areas) in the above openings would be planted with hardwoods.

### **Cumulative Effects**

The cumulative effects spatial boundary of the Middle River Breaks portion of the Oak Hickory Hills LTA is being utilized. The cumulative effects temporal boundary of 10 years was selected because that is the life of the Middle River project. These boundaries were selected so that the cumulative effects information would be measurable and meaningful.

#### **Cerulean warbler**

Some bottomland hardwood habitat would continue to be lost on non Forest Service system lands due to land clearing for agriculture and/or home sites. If a wildfire was to occur during time periods when a high intensity fire may occur, some riparian bottomland habitat could be temporarily altered. The species could be temporarily displaced and/or a nest could be inadvertently destroyed by a wildfire.

#### **Henslows sparrow:**

Activities such as fires suppression would continue, thereby resulting in a loss of potential habitat. In addition land conversion to home sites and other urbanization or be converted to row crops. Both of these activities would reduce the amount of potential habitat available. A wildfire could occur at any time, which could potentially displace some Migrant Loggerhead shrikes or destroy some potential nests. However a wildfire could help to maintain some of the larger openings required by this species.

### **Determinations:**

Based on the above information, there is a determination of **“May Impact” (MI), but will not likely contribute to a trend towards federal listing or loss of Viability for all alternatives and the Henslow Sparrow.**

Based on the above information, there is a **“No Impact” (NI) determination for all alternatives and the Cerulean warbler.**

**While the below species are not known to occur in the Middle River Project area or the Middle River Breaks portion of the Oak Hickory Hills LTA these sensitive species are found in the Oak Hickory Hills LTA and in prairies and are fire dependant species:**

**Yellow coneflower (*Echinacea paradoxa* var *paradxa*):** This occurs in open areas such as glades, bald knobs or in prairies. It prefers openings larger than 1 acre in size. It also

likes areas with a 0-50% crown closure. This coneflower has been found near roadsides. This species is often found in areas that are maintained by fire.

**Wavy Leaf purple coneflower (*Echinacea simulata*):** This coneflower occurs in openings such as glades, savannas and on prairies. This species is often found in area's that are maintained by fire.

**Royal Catchfly (*Silena Regina*):** This species likes open areas such as glades, bald knobs, savannas and rocky prairies with a canopy closure between 0 and 55 percent. It has also been observed along old logging roads. This species is often found in areas that are maintained by fire.

### **Direct and Indirect Effects**

#### **Yellow coneflower:**

##### **Alternative 1: No Action**

Because this is a fire dependant species, if no prescribed fires were to occur in the area, the amount of potential Yellow coneflower habitat would continue to be reduced and maybe even be lost eventually due to plant succession.

##### **Items common to all action alternatives (Alternative 2 and 3):**

These alternatives would burn the area where Yellow coneflower habitat may potentially be found. Prescribed burning would benefit potential habitat by eliminating and/or reducing woody encroachment into previously open areas. The effect of the burns enhancement in these areas would last for approximately 3 years. Any burns after that period would help to maintain the existing habitat.

##### **Alternative 2:**

This alternative burns a total of 650 acres, of which 400 consist of openland acres.

##### **Alternative 3:**

This alternative burns a total of 688 acres, of which 438 consist of openland acres.

#### **Wavy leaf purple coneflower:**

##### **Alternative 1: No Action**

There is no existing Wavy leaf purple coneflower habitat in the Middle River area. Because this is a fire dependant species, if no prescribed fires were to occur in the area, the amount of potential Wavy leaf purple coneflower habitat would continue to be reduced and maybe even be lost eventually due to plant succession.

##### **Items common to all action alternatives (Alternative 2 and 3):**

These alternatives would burn the area where Wavy leaf purple coneflower habitat would potentially be found. Prescribed burning would benefit potential habitat by eliminating and/or reducing woody encroachment into previously open areas. The effect of the burns enhancement in these areas would last for approximately 3 years. Any burns after that period would help to maintain the existing habitat.

**Alternative 2:**

This alternative burns a total of 650 acres, of which 400 consist of openland acres. .  
This burning would help the habitat for this fire dependant species.

**Alternative 3:**

This alternative burns a total of 688 acres, of which 438 consist of openland acres. .  
This burning would help the habitat for this fire dependant species.

**Royal Catchfly:****Alternative 1: No Action**

Because this is a fire dependant species, if no prescribed fires and/or wildfires were to occur in the area, the potential Royal catchfly habitat would continue to be reduced and may even eventually be lost due to plant succession.

**Items common to all action alternatives (Alternative 2 and 3):**

Prescribed fire would help to enhance and/or maintain any potential Royal Catchfly habitat, by eliminating and/or reducing woody encroachment into previously open areas. The effect of the burns enhancement in these areas would last for approximately 3 years. Any burns after that period would help to maintain the existing habitat.

**Alternative 2:**

This alternative burns a total of 650 acres, of which 400 consist of openland acres.

**Alternative 3:**

This alternative burns a total of 688 acres, of which 438 consist of openland acres.

**Cumulative Effects**

The cumulative effects spatial boundary of the Middle River Breaks portion of the Oak Hickory Hills LTA is being utilized. The cumulative effects temporal boundary of 10 years was selected because that is the life of the Middle River project. These boundaries were selected so that the cumulative effects information would be measurable and meaningful.

**Yellow coneflower and Wavy leaf purple coneflower:**

Timber harvest has resulted in a short-term increase of their habitats. Conversely fire suppression has resulted in a decline of their habitats. Land clearing for agriculture and/or home sites on non Forest Service system lands has resulted in a change (positive and negative) to their habitat. Areas that are converted to row crops and/or lawns do not provide suitable habitat for this species. A wildfire could occur during time periods when a high fire intensity may occur. A hot wildfire could potentially enhance or create some habitat for these fire dependant species.

**Royal Catchfly:**

Timber harvest has resulted in an increase of their habitats. Conversely fire suppression has resulted in a decline of their habitats. Land clearing for agriculture and/or home sites on non Forest Service system lands has resulted in a change (positive and negative) to their habitat. Areas that are converted to row crops and/or lawns do not provide suitable habitat for this species. A wildfire could occur during time periods when a intense fire may occur. A hot wildfire could open up more areas and thereby create more potential Royal catchfly habitat than a low intensity prescribed fire(s) could.

### **Determinations:**

Based on the above information and that there is no known existing habitat for these species, there is a **“No Impact” (NI) determination for all alternatives and the Yellow coneflower, Wavy Leaf purple coneflower and Royal Catchfly.**

### **Sensitive species which are not likely to occur in the Middle River Project area (including the Middle River Break portion of the Oak-Hickory Hills LTA) due to a lack of suitable habitat:**

This includes the Migrant Loggerhead shrike, Bachman's sparrow, Central Missouri cave amphipod, Eastern small spotted bat, Spectacle case naiad, Ouachita kidneyshell, Onondaga cave amphipod, Peregrine falcon, Bluff vertigo snail, Eastern Hellbender, Ozark Hellbender, Alligator Snapping turtle, Tumbling Creek cavesnail, Western fanshell, Snuffbox, Southern hickorynut, Sheepnose, Rabbitsfoot, Purple lilliput, Greer Springs micro-caddisfly, A Springtail (*Pseudosinella espana*), Dimorphic isopod, Bristly cave crayfish, Coldwater crayfish, Big River crayfish, Meek's crayfish, Big Creek crayfish, St. Francis River crayfish, White River crayfish, Western sand darter, Brook darter, Current darter, Ozark shiner, Sabine shiner, Longnose darter, Stargazing darter, Eastern slim minnow, Southern cavefish, Ozark sculpin, Blacknose shiner, Bluestripe darter, Crystal darter, Purple false foxglove, Earleaf foxglove, Wood Anemone, Tradescantia aster, Forked aster, Large-leaf aster, American barberry, Ofer hollow reedgrass, Bush's poppy mallow, Marsh bellflower, Buxbaum's sedge, Cherokee sedge, Fibrous-root sedge, Epiphytic sedge, Large sedge, Oklahoma sedge, Sharp-scale sedge, Dioecious sedge, Tussock sedge, Rigid sedge, Fox sedge, Ozark chinkapin, Southern cayaponia, Southern cayaponia, Ivy treebine, Trelease's larkspur, Yadkinense panicgrass, Open-ground whitlow-grass, Small flower throughwort, Pale avens (*Geum virginianum*), Featherfoil, Whorled pennywort, Large whorled pogonia, Weak rush, Small-fruit seedbox, Baldwin's milkvine, Bog buckbean, Large-leaf grass-of-parnassus, Carolina phlox, Spotted phlox, Knotweed leaf-flower, Yellow-fringed Orchid, Small green woodland orchid, Southern rein orchid (*Platanthera flava flava*), Pale green orchid, Halberd-leaf tearthumb, Spotted pondweed, Nuttall's oak, Harvey's beakrush, Orange (Sullivant) coneflower, Narrow-leaf pink, Gibbous panic-grass, Canby's bulrush, Weakstalk bulrush, Hall's bulrush, Kidney-leaved sullivantia, Ozark spiderwort, Ozark trillium, Yellowleaf tinker's weed, Ozark cornsalad, Northern arrow-wood, Barren strawberry, A liverwort (*Metzgeria furcata*), Yellow starry fen moss, A moss (*Dichelyma capillaceum*), A moss (*Seligeria donniana*), Narrowleaf peatmoss, Sphagnum moss, Log

fern (*Dryopteris celsa*), Goldies woodfern, Netted chain fern, Butternut, Oval Ladies' Tresses, Fissa sedge, Straw sedge, Bush's skullcap, Gattinger goldenrod, Pale Manna grass and Sand grape. *Note: Because these Sensitive species and their habitat does not occur in the Middle River Project Area including the Middle River Breaks portion of the Oak-Hickory Hills LTA they will not be discussed any further in this document. Therefore a "No Impact" (NI) is concluded for all the above listed species.*

#### **Irreversible or Irretrievable Commitment on Resources**

None of the alternatives would have an irreversible or irretrievable commitment on this resource in the proposed Middle River Project Area.

### **References:**

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Unpb Missouri Department Of Conservation Heritage Database. P.O. Box 180, Jefferson City, Missouri 65102. 573-751-4115.

Yatskievych, G. 1999. Steyermark'S Flora Of Missouri, Volume I (Revised Edition). Missouri Dept. Of Conservation And Missouri Botanical Garden Press. St Louis, Mo. 991 Pp.

**Electronic Information sources:**

The Missouri Department of Conservation maintains the Missouri Fish and Wildlife Information System (MOFWIS) and Heritage database. *Note: The two above sites can be accessed at [www.conservation.state.mo.us/nathis/](http://www.conservation.state.mo.us/nathis/).*

The Nature Serve database <http://www.natureserve.org/explorer> was accessed on June 30, 2003.

U.S.D.A. – Forest Service – Forest Health Protection – Pesticide Management & Coordination 2002. - Several pesticide risk assessments (including Glyphosate). <http://www.fs.fed.us/foresthealth/pesticide/risk.htm>



**MARK TWAIN NATIONAL FOREST BIOLOGICAL EVALUATION AND SUMMARY OF EFFECTS  
FOREST SERVICE (R-9) REGIONAL FORESTER SENSITIVE SPECIES (2/29/2000 list)**

**Project Name:** Middle River      **Project Location:** Houston/Rolla/Cedar Creek Ranger District      **LTA:** HO

**Contact Name:** Klaus Leidenfrost

**Project location legal description:** Township 46 North, Range 10W, sections 13, 14, 24, 25 and 36.

**Project Type and Information:** The Middle River project includes various Wildlife Habitat enhancement needs (via open land management, prescribed fire and timber harvest), Watershed health needs, Recreation Management needs and any connected and associated Actions. (See Chapter 1 and 2 of the Middle River Environmental Assessment for additional information).

Only the Henslow's sparrow, Cerulean warbler, Yellow coneflower, Wavy-leaf Purple coneflower and the Royal catchfly were fully analyzed for this project. See the Wildlife, Fish and Plant Sensitive species sections in Chapter 3 of the Middle River Environmental Assessment for the actual analysis (including any effects) on these species.

*Note: A NI determination is concluded for all the other RFSS not listed below since they do not occur in or have habitat within the Middle River Project Area or the Middle River Breaks portion of the Oak Hickory Hills LTA.*

Common Name	Scientific Name	Status	Species Present	Habitat Present	Species Potentially Affected?	Habitat Potentially Affected?	Determinations		
							Alt.1	Alt.2	Alt. 3
Henslow's sparrow *	<i>Ammadramus henslowii</i>	S	N	Y	Y	Y	MI	MI	MI
Cerulean warbler *	<i>Dendroica cerulea</i>	S	N	Y	N	N	NI	NI	NI
Yellow coneflower **	<i>Echinacea paradoxa var paradoxa</i>	S	N	N	N	Y	NI	NI	NI
Wavy-leaf Purple coneflower **	<i>Echinacea simulata</i>	S	N	N	N	Y	NI	NI	NI
Royal catchfly **	<i>Silena regia</i>	S	N	N	N	Y	NI	NI	NI

\* Occurs in the Middle River Breaks portion of the Oak Hickory Hills LTA.

\*\* Does not occur in the Middle River Breaks portion of the Oak Hickory Hills LTA. However they do occur in other portions of the Oak Hickory Hills LTA. These species require openings such as prairies and they are fire dependant species, therefore they were included in this analysis.

**Status T** = Threatened, **E** = Endangered, **P** = Proposed, **S** = Forest Service Region 9 Sensitive Species.

**Determination for Federally listed Species:** **NE** – No Effect, **NLAA** – Not Likely to Adversely Effect, **NLAA (BE)** - Not Likely to Adversely Effect with a Beneficial Effect, **LAA** - Likely to adversely Effect, **NLJCE**- Not Likely to Jeopardize the continued existence (proposed species only) **BA/BO** – Tiered to Biological Assessment/Biological Opinion.

**Determination for Forest Service Sensitive Species:** **NI** – No Impact. **MI** – May impact, but will not likely contribute to a trend towards federal listing or loss of Viability. **WI**- Will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability.

## SIGNATURE

Klaus Leidenfrost  
Klaus Leidenfrost  
Houston/Rolla/Cedar Creek  
District Wildlife Biologist

Sept. 15, 2003  
Date