

BIOLOGICAL EVALUATION
Monongahela National Forest

CHERRY RIVER PROJECT AREA
ENVIRONMENTAL ASSESSMENT

GAULEY RANGER DISTRICT
Nicholas County, West Virginia

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EXECUTIVE SUMMARY

This Biological Evaluation (BE) documents potential effects of implementation of the Proposed Action (Alternative C) of the Cherry River Timber Analysis on nine federally listed threatened and endangered (T&E) species and 90 R9 Forester's Sensitive Species that occur on the Monongahela National Forest (MNF).

The Regional Forester for Region 9 has developed a list of sensitive species that occur on each national forest in the region (R9 SS list; 2670 technical update Oct. 20, 2003). Sensitive species (SS) are those plant and animal species identified by the Regional Forester for which population viability is a concern. Species identified for the MNF are shown in the attached "Likelihood of Occurrence" (LOO) table (Appendix A).

The primary focus for this Biological Evaluation is to document the effects of the Proposed Action and determine if the project complies with requirements of ESA and FS policy. This BE will determine whether the proposed action or alternatives are likely to: (1) affect proposed or federally listed species or designated critical habitat; (2) jeopardize the continued existence of species that are proposed for listing; (3) adversely modify proposed critical habitat; or (4) impact Region 9 sensitive species that may occur within the analysis area.

This BE documents the review of office records and field sites, and the analysis of the effects of implementing the Proposed Action and alternatives of the Cherry River Timber Analysis on endangered, threatened and sensitive species. This biological evaluation was written utilizing the results of botanical surveys, site checks to determine habitat type, and consulting existing threatened, endangered, and sensitive (TES) species records of the area.

Determinations Of Effects (Alternative C)

Threatened, Endangered, and Proposed Species (MNF)

The following determinations of effects to Threatened and Endangered species have been made as a result of this Biological Evaluation:

Bald eagle (*Haliaeetus leucocephalus*)
May Affect, Not Likely To Adversely Affect.

Cheat Mountain salamander (*Plethodon nettingi nettingi*)
No Effect.

Virginia big-eared bat (*Corynorhinus townsendii virginianus*)
No Effect.

WV northern flying squirrel (*Glaucomys sabrinus fuscus*)
No Effect

Running buffalo clover (*Trifolium stoloniferum*)
No Effect

Shale barren rock cress (*Arabis serotina*)
No Effect

Small-whorled pogonia (*Isotria medeoloides*)
May Affect, Not Likely To Adversely Affect

Virginia spiraea (*Spiraea virginiana*)
No Effect

Indiana bat (*Myotis sodalis*)
May Affect, Likely To Adversely Affect. No effects beyond those previously disclosed and addressed in the *Revised Biological Assessment* (USDA 2001) and *Biological Opinion* (USFWS 2002).

Request For Consultation – The Monongahela National Forest requests concurrence from USFWS on MNF determinations for the bald eagle, Cheat Mountain salamander, VA big-eared bat, WV northern flying squirrel, running buffalo clover, shale barren rock cress, small-whorled pogonia and VA spiraea. The Forest also requests initiation of formal consultation on the Indiana bat (as required under ESA) under the tiering process described in the *Biological Opinion* (Term and Condition #11) for the proposed Threatened and Endangered Species Plan Amendment.

The Forest also requests initiation of formal consultation on the Indiana bat (as required under ESA) under the tiering process described in the *Biological Opinion* (Term and Condition #11) for the proposed Threatened and Endangered Species Plan Amendment.

USDA Forest Service Regional Forester Sensitive Species (RFSS), Region 9

The following determinations of effects to Region 9 Sensitive Species have been made as a result of this Biological Evaluation:

Given the considerable number and significant biological differences between RFSS found on the MNF, determinations vary in type and degree from species to species. Region 9 Sensitive Species inhabiting the project area will either experience **“no impacts”** or **“may impact individuals but not likely to cause a trend to federal listing or a loss of viability”** from implementation of Modified Alternative C.

INTRODUCTION

The Monongahela National Forest (MNF) is conducting an Environmental Assessment (EA) for a proposed timber sale and associated management activities in the vicinity of Richwood, WV. The EA can be viewed at: www.fs.fed.us/r9/mnf/environmental/nepa_documents/nepa_index.htm.

The Proposed Action and alternative to it are evaluated with consideration of public issues and the purpose and need. All proposed activities are guided by the direction stated in the Monongahela National Forest Land and Resource Management Plan as amended. The deciding official for this project will be Clyde Thompson, Monongahela National Forest Supervisor.

Biological Evaluation

The primary focus of this Biological Evaluation (BE) is to document the effects of the Preferred Action (Alternative C) and determine if the project complies with requirements of ESA and FS policy. Federal agencies are required to comply with provisions of the Endangered Species Act (ESA) of 1973, as amended. This includes a requirement to complete a biological assessment, and to consult with the US Fish and Wildlife Service on projects that may affect species federally listed as threatened, endangered or proposed (TEP) that occur on the Forest. Forest Service (FS) policy on threatened and endangered species is found in the FS Manual §2670.31. Sensitive species policy also includes a requirement to complete a biological evaluation on Regional Forester Sensitive Species (RFSS) that occur on the MNF. Sensitive species policy can be found in FS Manual §2670.32.

Accordingly, this BE consists of two parts - a biological assessment addressing TEP species and a biological evaluation addressing RFSS.

The biological assessment documents potential effects of implementation of the proposed project on nine federally listed threatened and endangered (T&E) species found on the MNF including: the bald eagle (*Haliaeetus leucocephalus*), Cheat Mountain salamander (*Plethodon nettingi nettingi*), Indiana bat (*Myotis sodalis*), Virginia big-eared bat (*Corynorhinus townsendii virginianus*), West Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*), shale barren rock cress (*Arabis serotina*), Virginia spiraea (*Spiraea virginiana*), Running buffalo clover (*Trifolium stoloniferum*), and the Small-whorled pogonia (*Isotria medeoloides*). At the present time there are no species occurring on the Forest that are proposed for listing.

The biological evaluation documents potential effects of implementation of the proposed project on 93 R9 Regional Forester's Sensitive Species that occur on the MNF. Regional Forester Sensitive species are those plant and animal species identified by a Regional Forester for which population viability is a concern. The Regional Forester for Region 9 has developed a list of sensitive species that occur on each national forest in the region (R9 RFSS list; 2670 technical update Oct. 20, 2003). Species identified for the MNF are shown in the attached "**Likelihood of Occurrence**" (LOO) table (**Appendix A**).

This BE documents the review of office records and field sites, and the analysis of the effects of implementing the Preferred action (Alternative C) and to a limited degree the other alternatives of the *Cherry River Environmental Assessment* on endangered, threatened and sensitive species. This biological evaluation was written utilizing the results of botanical surveys, site checks to determine habitat type, consulting existing threatened, endangered, and sensitive (TES) species records of the area and discussions with the West Virginia Field Office, U.S. Fish and Wildlife Service and West Virginia Division of Natural Resources.

Determinations will be made as to whether the preferred alternative (Alternative C) is likely to: (1) affect proposed or federally listed species or designated critical habitat; (2) jeopardize the continued existence of species that are proposed for listing; (3) adversely modify proposed critical habitat; or (4) impact Region 9 sensitive species that may occur within the analysis area.

PROJECT LOCATION/AREA DESCRIPTION

The Holcomb and Cherry River Opportunity Areas (OAs 23.005, 23.006) are located in Nicholas County just north and west of Richwood, West Virginia and encompasses 6400 acres of federal lands (Figure 1). Only the areas within these OAs and the Cherry River Watershed is being considered at this time. The boundaries of these OAs include WV Route 39/55, North Fork Cherry, and the Cherry River composite on the south, the Richwood corporate boundary on the east with FSR 76 The ridge top between the Cranberry and Cherry River watersheds forms the northern boundary and to the west the confluence of the Cherry River with the Gauley River. The Management Prescription for this area is the 3.0 which emphasis on large, high quality hardwood trees for lumber and veneer. Hard mast production, and scenic attributes are also emphasized, along with wildlife species tolerant of disturbances such as deer, grouse, and squirrel.

The Cherry River Watershed area is located in the M221Bc Southern High Allegheny Subsection an area consisting of broad ridges with steep (20-60 percent slopes) hill and mountain side slopes. The area is a dissected high plateau with sharp valleys and many peaks at 4,600 feet and higher. General characteristics of the land in the project area are described by two land type associations (LTAs) under the Monongahela National Forest Ecological Classification System. The two associations are; M221Bc01 – Allegheny Plateau and M221Bc02 – Allegheny Plateau Red Spruce – Frigid soils. The western portion of the watershed is primarily the Allegheny Plateau LTA Bc01

LTA Bc01 is defined by highly dissected topography, with northern hardwoods, and mixed mesophytic productive sites on very erosive soils. The geology is made up of Pennsylvanian sandstone/siltstone/shale and includes a portion of the red shales from Mauch Chunk Formation. Primary erosion processes include surface erosion (Sheet, rill, and gully) and landslides.

The existing forest in the watershed is mainly typed as either mixed hardwoods, sugar maple-beech/yellow birch, and mixed oak. Mixed hardwoods could include sugar maple, beech, black cherry, red oak, basswood, and white ash as major components. Hemlock is likely in the riparian areas.

THREATENED AND ENDANGERED SPECIES

Biological Assessment

CONSULTATION HISTORY

During the development of the Forest Plan (1986), the MNF consulted with the U.S. Fish and Wildlife Service (USFWS) regarding the effects Forest Plan implementation could have on the six threatened and endangered species that were known to occur on the MNF at the time. The USFWS' opinion indicated that Forest Plan implementation likely would not jeopardize continued existence of eastern cougar (*Felis concolor* cougar), Virginia (VA) big-eared bat, and Indiana bat. Their opinion for peregrine falcon (*Falco peregrinus anatum*), and bald eagle was that Forest Plan implementation would promote their conservation. Similarly, for WV northern flying squirrel, their opinion was that implementation likely would not jeopardize its continued existence, and it may promote its conservation.

(Note: Cheat Mountain salamander, shale barren rock cress, VA spiraea, running buffalo clover, and small-whorled pogonia were not included in this consultation because they were not federally listed at that time or known to occur on the MNF and peregrine falcon has subsequently been delisted).

As new information regarding T&E species has been obtained over time, the Forest has evaluated the relationship of the new information with the existing Forest Plan, and if needed, amended the Forest Plan to keep it consistent with applicable laws like the Endangered Species Act (ESA) of 1973, as amended. The MNF has worked closely with the USFWS, other Federal and State agencies, and members of the scientific community, to initiate surveys, supplement biological evaluations or environmental assessments, and, as appropriate, apply project-specific mitigations (e.g. seasonal restrictions or buffers) to ensure that take of threatened and endangered species did not occur.

In 1999, the MNF initiated a detailed evaluation of the effects current and projected management activities have on threatened and endangered species of the MNF. This was prompted primarily by new Indiana bat and Virginia northern flying squirrel information. As part of this analysis, research and data acquired since the last amendment was reviewed, and determinations were made as to whether Forest Plan standards need to be adjusted to comply with management and protection requirements of the ESA and to move federally listed species towards recovery.

In 2000, the Forest's analysis was documented in the Biological Assessment for Threatened and Endangered Species on the MNF (Biological Assessment). In compliance with provisions of the ESA, the MNF submitted the Biological Assessment to the USFWS and consulted with them about the prospect of amending Forest Plan threatened and endangered species standards to address the MNF's determinations.

In spring 2001, the USFWS reviewed the Biological Assessment and identified several issues that needed resolution before they could issue a biological opinion. The primary issue to be resolved was new Virginia northern flying squirrel management direction being considered for inclusion in the 1990 Appalachian Northern Flying Squirrels' (*Glaucomys sabrinus fuscus*, *Glaucomys sabrinus coloratus*) Recovery Plan. The MNF agreed to revise the Biological Assessment to address the USFWS' concerns. During the course of this revision, USFWS amended the Appalachian Northern Flying Squirrel's (*Glaucomys sabrinus fuscus*) (*Glaucomys sabrinus coloratus*) Recovery Plan (USFWS 1990) on September 6, 2001 to include new habitat identification and management guidelines for the Virginia northern flying squirrel.

On October 5, 2001, a [Revised Biological Assessment](#), which included the new Recovery Plan guidelines, was finalized and forwarded to USFWS for consultation. In this assessment the Forest determined that existing standards were adequate to manage and protect T&E species habitat occurring on the Forest. Further, the Revised BA concluded that existing standards were adequate to manage and protect eight of the nine T&E species known to occur on the Forest. The Revised BA concluded that existing standards were not adequate to prevent the incidental taking of individual Indiana bats that may be roosting in a tree during the otherwise lawful implementation of MNF management activities.

In a November 9, 2001 letter, the USFWS stated they believe the Revised Biological Assessment adequately evaluated the results of continued implementation of the Forest Plan, as amended, on the nine federally listed species that occur on the MNF. The USFWS concurred with the MNF's determinations that continued implementation of the Forest Plan will not negatively impact the WV northern flying squirrels, bald eagle, VA big-eared bat, Cheat Mountain salamander, running buffalo clover, shale barren rock cress, small whorled pogonia, and VA spiraea. Their concurrence concluded ESA Section 7 consultation for these species at the programmatic level. With regard to Indiana bat, the USFWS concurred with the Forest's determination that continued implementation of the Forest Plan will result in a "May Affect, Is Likely to Adversely Affect" determination.

The FS and USFWS entered into formal programmatic consultation for the Indiana bat on November 9, 2001 and the Service issued their final [Biological Opinion on the Impacts of Forest Management and Other Activities to the Indiana Bat on the MNF and Incidental Take Permit](#) on March 26, 2002. The Biological Opinion (BO) listed 11 specific Terms and Conditions the MNF is required to implement to minimize the level of incidental take of Indiana bats. In the BO the USFWS agreed to "implement a tiered programmatic consultation approach.

In March, 2004, the MNF completed a Threatened and Endangered Species Amendment to the Monongahela National Forest Land and Resource Management Plan. This Amendment incorporated the Reasonable and Prudent Measures and Terms and Conditions identified in the BO into the Forest Plan.

ANALYSIS OF EFFECTS

To determine which TEP species and RFSS could be affected by projects developed in the action alternatives, a “Likelihood of Occurrence” (LOO) table (Appendix A) specific to the Cherry River area was completed. In this table, all Monongahela National Forest TEP species are listed along with their current federal/state ranking, habitat description requirements and known locations. A comparison between species habitat requirements and existing project area habitat was made. Species information was collected from District/Forest TEP and RFSS records and files, records from the WV Natural Heritage Program, research literature, field surveys, and personal communication with specialists to determine each species’ likelihood of occurrence in this project area.

Conclusions drawn from the LOO table dictate the level of analysis needed for each Threatened or Endangered species. Threatened or Endangered species determined not to occur or unlikely to occur in the project area due to lack of habitat are not carried in further analysis. **An analysis of direct, indirect, and cumulative effects from Alternative C will be completed for T&E species determined to be present and/or when habitat for T&E species is present.**

Species Not Likely To Be Adversely Affected

It has been determined that the preferred project (Alternative C) will have no affect on or is not likely to adversely affect the following listed species or designated critical habitat: bald eagle, Cheat Mountain salamander, Virginia big-eared bat, running buffalo clover, West Virginia Northern flying squirrel, and shale barren rock cress due to lack of habitat or known occurrences within or near the project area.

The small whorled pogonia and Virginia spiraea are not known to occur in the Cherry River project area however habitat for them may occur within or near the project area.

The West Virginia Northern flying squirrel is the only endangered species known to be present on the central and eastern portions of the North Fork Cherry River Watershed. The nearest suitable Northern flying squirrel habitat is 3-6 miles from the proposed action area on the east side of the watershed.

CHEAT MOUNTAIN SALAMANDER

This small woodland salamander is found in red spruce and mixed deciduous forests above 2,700’ in microhabitats that have relatively high humidity, moist soils and cool temperatures. Four potential Cheat Mountain salamander sites on the east side Cherry River watershed have been surveyed by Dr. Tom Pauley, Marshall University. No individuals were found during these efforts. In 2001, Dr. Pauley provided the Monongahela National Forest maps identifying high and low potential habitat, known population locations and areas surveyed. There are no acres of potential Cheat Mountain salamander habitat identified in Western Cherry River Watershed area.

Direct, Indirect and Cumulative Effects

There are no harvest activities planned in potential CMS habitat within the Cherry River watershed area. The nearest CMS low potential habitat is located 5 miles east of the project area around Summit Lake. Timber harvest activities can create long term drought like stressful conditions to salamanders, which could cause desiccation or force escape to underground retreats

where food is scarce. The home range of CMS is small (approximately 10-6 ft²). Timber harvest activities created in CMS areas would significantly affect microclimate conditions, indirectly affecting CMS populations.

Timber stand improvement activities, removal of vines and oak/mast tree release will have no direct effects on CMS. No indirect effects from TSI are anticipated as TSI does not cause soil compaction, nor does it substantially alter the forest canopy or composition. Road management activities directly affect the forest floor and therefore have potential to harm or kill salamanders or change their habitat. These activities also may fragment CMS populations. Direct effects described under harvest activities apply to road construction, reconstruction, and maintenance. Tree removal is required for timber landing areas, where wildlife openings will be created. This activity has similar potential direct effects as regeneration harvests.

Determination: No Effect.

VIRGINIA SPIRAEA

Virginia spiraea is known to exist on damp, rocky mountain riverbanks, usually at water's edge, that drain into the Ohio River basin. Only one small population occurs on the MNF, along the Greenbrier River in Greenbrier County. Twenty-six populations exist in West Virginia.

Potential habitat within the Cherry River Watershed would be along the Cherry River Composite, North Fork Cherry River, and its larger tributaries. Since this area is protected under the riparian guidelines there would be no impacts to this species under Alternative C and no Virginia spiraea individuals or populations were found during surveys of the proposed cutting units.

Direct, Indirect and Cumulative Effects

No direct, indirect, or cumulative effects are anticipated to Virginia spiraea since habitat for this species will be avoided by Alternative C.

Determination: No Effect.

SMALL WHORLED POGONIA

The small whorled pogonia prefers, dry, deciduous woods with acidic soil. Tree species commonly associated with this species include white oak (*Quercus alba*), white pine (*Pinus strobus*), flowering dogwood (*Cornus florida*), and witch hazel (*Hamamelis virginiana*). Small whorled pogonia has been found on one site in Greenbrier County, WV. Surveys have been completed in all proposed cutting units. No small whorled pogonia individuals or populations were found in the areas surveyed.

Direct, Indirect and Cumulative Effects

No direct, indirect, or cumulative effects are anticipated to small whorled pogonia.

Determination: May effect, not likely to adversely affect.

VIRGINIA BIG-EARED BAT

The Virginia big-eared bat (VBEB) was listed as endangered under provisions of the Endangered Species Act on December 31, 1979. A Recovery Plan, developed by the U.S. Fish and Wildlife Service, was signed May 8, 1984. VBEB is a geographically isolated and sporadically distributed cave obligate species.

West Virginia holds its largest populations, particularly Pendleton County (Barbour and Davis 1969, Stihler pers. comm. 2000). West Virginia's Cave Mountain Cave, Hellhole, Hoffman School Cave, Sinnit Cave, and Cave Hollow/Arbogast Cave are designated as "Critical Habitat" for this species based on the precise physical structure, temperature, and humidity conditions required for its continued survival, as well as the significant number of VBEB that occur there. Cave Mountain and Cave Hollow/Arbogast are on the MNF. These caves would be unaffected by the proposed project.

The closest caves to the project area are McKeevers waterfall, Overholts Dome, Carpenters Pit, Turkey Roost, and Barnes Pit. All these caves are located a considerable distance from the Cherry River watershed boundary (70-75 miles). None of these are currently known to harbor VBEB.

Geographically isolated VBEB populations have different foraging habitats (Dalton et al. 1989, Adam et al. 1994, Buford and Lacki 1995). In Virginia, VBEB forage over open pastures, corn and alfalfa fields, and around tree crowns (Dalton et al. 1989). In contrast, VBEB populations on the Daniel Boone National Forest, Kentucky disproportionately use cliffs and forest habitat to forage, and rock shelters at cliff bases are used as night roosts. Use of different foraging habitats among VBEB populations or subspecies is a response to different habitat availabilities and demonstrates its flexibility to local conditions (Adam et al. 1994).

A WVDNR study found that bats foraged in wooded areas and open habitats. Grazed areas used by the bats consisted of old fields with considerable vegetative structure composed largely of thistles, scattered trees, and riparian vegetation along a small creek. The greatest distance traveled was approximately 6 miles (10.5 km) from the cave. Even when return trips to the cave were necessary, bats did not select foraging areas close to the cave. Individual bats often had foraging areas that they used on consecutive nights, but most bats appeared to have more than one foraging area (Stihler 1995).

Direct, Indirect and Cumulative Effects

There are no known VBEB hibernacula or maternity colonies within or near the project area. Therefore, there will be no direct, indirect or cumulative effects to hibernacula or maternity colonies.

Timber harvesting potentially could alter foraging habitat although the probability for this is low due to lack of caves and or known occupancy in the project area.

Determination: No Effect.

WEST VIRGINIA NORTHERN FLYING SQUIRREL

On July 31, 1985, USFWS listed Virginia Northern Flying Squirrel (WVNFS) as endangered (50 CFR Part 17). The USFWS released the Appalachian Northern Flying Squirrel (*Glaucomys sabrinus fuscus*) (*Glaucomys sabrinus coloratus*) Recovery Plan on September 24, 1990 (USFWS 1990). A Recovery Plan Update was signed on September 6, 2001 which includes an Amendment to Appendix A; Guidelines for Habitat Identification and Management for *Glaucomys sabrinus fuscus* (USFWS 2001).

The amended guidelines stipulate two basic types of WVNFS habitat: suitable and unsuitable. Suitable WVNFS habitat is defined as areas that have the habitat characteristics required by the squirrel as indicated by known capture locations. Unsuitable habitat does not currently have habitat components preferred by the WVNFS and must, therefore, be assumed to be unoccupied by WVNFS. Consequently, management activities planned in unsuitable habitat will not affect the WVNFS and will not require consultation or permits pursuant to the ESA (USFWS 2001).

To effectively delineate suitable WVNFS habitat, a map of suitable habitat has been produced, reviewed and refined collaboratively among the Service, the MNF and the WVDNR (USFWS 2001). All mapped suitable habitat, as defined and displayed in the most recent map version, is assumed potentially occupied by WVNFS, and emphasis will be placed on protecting this habitat. No projects or activities that would adversely affect suitable habitat on the MNF will be allowed unless authorized under Section 7 or, in the case of scientific permits, Section 10(a)(1)(A) (USFWS 2001).

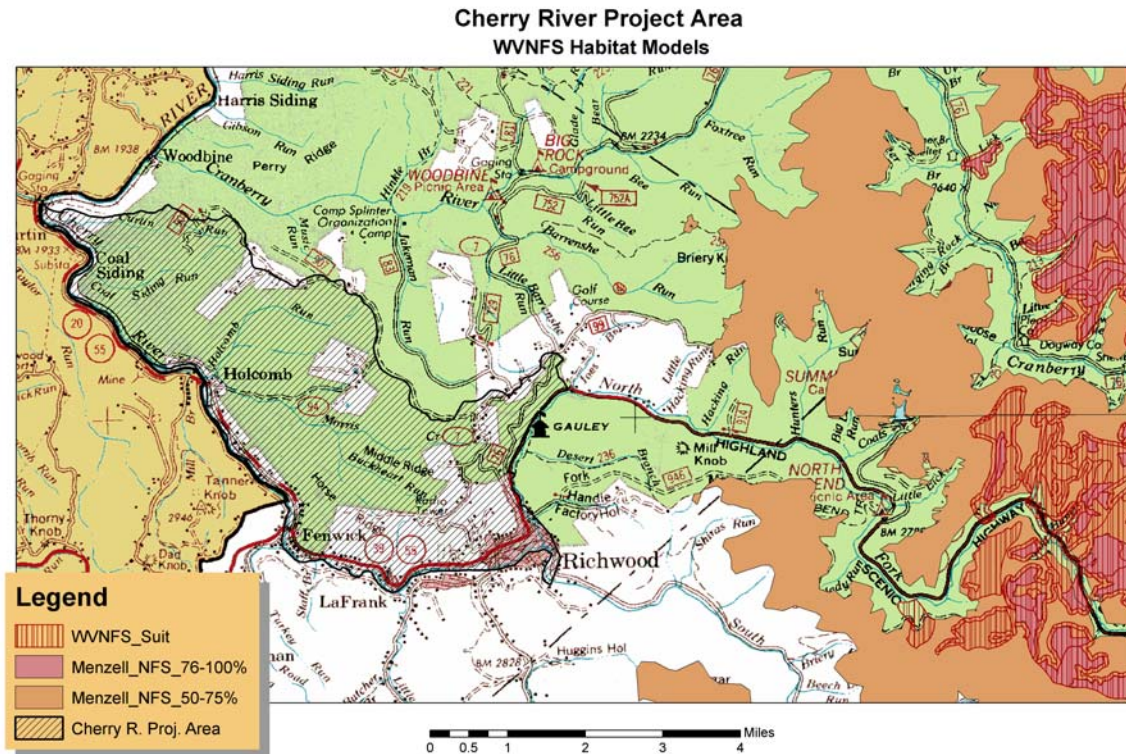
Habitat: Cherry River

Almost all of the WVNFS captures in WV have been associated with red spruce or mixed red spruce/northern hardwood forest types with only 1.2% of the 878 captures associated with Norway spruce (USFS 2001). Recent information indicates that squirrels have been captured just below 2350 feet in elevation. Figure 2 shows the relationship of modeled habitat for WVNFS and the project area.

Direct, Indirect and Cumulative Effects

An updated programmatic WVNFS suitable map was completed and approved by USFWS and WVDNR in November 2004. This effort compared project area maps to available stand data, aerial photography, maps and models of potential suitable WVNFS habitat, including the MNF forest-wide suitable map prepared for the Forest Plan Amendment (2004) and the results of the habitat modeling conducted by Menzel (2003). As a result of this collaborative, early consultation **there are no timber harvest activities planned within suitable squirrel habitat (MP 832)**. Consequently, there are no adverse effects anticipated to this species under Alternative C in suitable habitat. There are no harvest activities within or near suitable areas, or Menzel's habitat model 50-75% or 76-100% probability of finding WVNFS areas.

Cherry River Area Suitable habitat for WVNFS and Menzel's 50-75% and 76-100% probability of finding WVNFS areas.



Indirectly harvest within unsuitable habitat that improves conditions for WVNFS would be beneficial. Indirectly, thinning could enhance residual overstory and understory tree growth and result in faster attainment of desirable habitat characteristics within unsuitable habitat. Thinning designed to release conifer components, would be beneficial.

Thinning designed to release hard-mast species in unsuitable areas could encourage an influx of southern flying squirrels which may compete with any WVNFS in nearby areas. Thinning may also alter microclimates and decrease lichen and fungal food availability. Neither of these would contribute appreciable negative effects.

Timber stand improvement activities (manual vine control, and small diameter tree cutting) will not directly affect WVNFS. Indirectly, increased undergrowth and vine removal could enhance predation of WVNFS when ground foraging.

Cumulative effects analysis includes reasonable and foreseeable actions on both private and public lands within and beyond the project area. Cumulative effects related to timber management on private land could affect WVNFS. Suitable habitat on FS lands adjacent to the project area will be protected under current guidelines. This project will not contribute any direct effects to cumulative effects.

Determination: No Effect.

Species Likely To Be Adversely Affected

INDIANA BAT

The following information on Indiana bat has been taken from a recent Tier 2 BO issued to the MNF (Desert Branch, March 15, 2005) and supplemented where appropriate.

Status of the Species

The Indiana bat is a migratory species ranging throughout much of the eastern half of the U.S. The Indiana bat was listed as endangered by the Service pursuant to the Endangered Species Preservation Act on March 11, 1967 (32 Federal Register 4001). Listing was warranted based primarily on large-scale habitat loss and degradation, especially at winter hibernation sites, and significant population declines that continue today. From the time that the species was listed, the range-wide population of the Indiana bat has declined from approximately 883,300 Indiana bats for 1960/1970 to 387,301 in 2003/2004, or approximately 56 percent (Clawson 2002; Lori Pruitt, personal communication, 2004). It is currently estimated that West Virginia supports a hibernating population of approximately 10,770 Indiana bats (WVDNR, 2004).

Due to the colonial nature of Indiana bats, conducting censuses of hibernating bats is the most reliable method of tracking population/distribution trends range-wide, and provides a good representation of the overall population status and distribution. However, the relationship between wintering populations and summering populations is not clearly understood. It is known that individuals of a particular maternity colony come from one to many different hibernacula, therefore the summer location of most, if any, individuals of any particular hibernacula is often not known. Indiana bats have been documented to travel up to 300 miles from their hibernaculum to their maternity areas (Gardner and Cook 2002). Therefore, bats wintering or summering in West Virginia may come from a number of surrounding states, and the status of Indiana bats within each state's hibernacula may not reflect the status of that state's maternity population.

Additional information on the status of the species, including life history characteristics is provided in the Revised BA and programmatic BO, and is incorporated here by reference.

Reasons for Decline and Continued Threats

Because disturbance to hibernacula is a major threat to the Indiana bat, protection of hibernacula is a management priority. While many hibernacula have been protected, disturbance to hibernacula continues. For example, the largest hibernacula in Indiana (50,941 Indiana bats in 2003) is not gated, and based on data from electronic monitors in the cave, unauthorized visits to this cave occur during critical life stage periods. Also, at the only large hibernacula in Ohio (9,436 Indiana bats in 2004), there are still tours, as well as other commercial activities, taking place in the cave during the hibernation period.

Land use practices have also been identified as a suspected cause in the decline of the Indiana bat, particularly because habitat in the bats' maternity range has changed dramatically from pre-

settlement conditions. Indiana bats exhibit site fidelity to their traditional summer maternity and foraging areas, and are known to return to the same general area to establish maternity colonies from year-to-year (Humphrey et al. 1977; Gardner et al. 1991a, b; Callahan et al. 1997; Indianapolis Airport Authority 2003, 2004; Kurta and Murray 2002; Butchkoski and Hassinger 2002; Gardner et al. 1991a, Gardner et al. 1996). Roosting/foraging area fidelity may serve to increase the probability of successful reproduction, and to maintain social interactions between members of the population. Bats using familiar foraging and roosting areas may have decreased susceptibility to predators, increased foraging efficiency, and an improved ability to switch roosts if impacts occur to the original roost (Gumbert et al. 2002). In turn, site fidelity may also inhibit the ability of Indiana bats to pioneer new areas (Sparks in Service 2004c). Due to the ephemeral nature of roosting sites, bats are probably not dependant on the continued suitability of an individual tree. However, landscape level alterations in traditional maternity habitats may adversely affect Indiana bat survival and reproductive success. Notably, a formal consultation with the Corps of Engineers was recently completed (USFWS 2005) that may result in take of a maternity colony Boone County, WV as a result of harm through summer habitat loss.

In addition to an increased focus on Indiana bat summer habitat, attention has also been directed to investigate pesticide exposure (Clark et al. 1987; Clawson 1987; Garner and Gardner 1992; Callahan et al. 1997; 3D/E 1995; O'Shea and Clark 2002; Kurta and Murray 2002). Insecticides have been known or suspected as the cause of a number of bat die offs in North America, including endangered gray bats in Missouri (Mohr 1972; Reidinger 1972; Clark and Prouty 1976; Clark et al. 1978). The insect diet and longevity of bats also exposes them to environmentally persistent organochlorine chemicals that may bioaccumulate in body tissue and cause sub-lethal effects such as impaired reproduction (O'Shea and Clark 2002).

Environmental Baseline

The environmental baseline for the MNF was established and described on pages 15 -16 in the programmatic BO. The baseline condition in regard to winter hibernacula in the action area remains largely unchanged. However, since issuance of the programmatic BO, the environmental baseline in regard to the summer presence of Indiana bats in West Virginia and the MNF has changed appreciably. Contributors to this change include additional captures of male and female Indiana bats on the MNF and throughout the State; and documented cases of maternity colonies within the MNF proclamation boundary and in West Virginia.

These captures of both male and female bats confirm that the Indiana bat uses forested habitats throughout the state, including habitats within the MNF, for summer foraging and roosting. The increase in recent captures may not reflect an actual increase in densities of Indiana bats summering within the state or the MNF, rather these results may reflect the fact that survey efforts in relation to project review and monitoring have increased in recent years. As a result of coordination between the Service and the MNF, and in accordance with terms and conditions of the programmatic BO, the MNF has adapted Indiana bat monitoring efforts to focus on detecting the presence of the bat in likely habitat, rather than surveying specific harvest locations prior to project clearance. These changes may have resulted in the increased detection of the bat on the MNF, and should allow for improved protection for the species and more accurate tracking and evaluation of potential take as a result of MNF projects.

Additionally, The Forest Plan Threatened and Endangered Species Amendment was also signed into effect after the programmatic BO (and the initial Cherry River scoping and purpose and need statement), increasing regulatory mechanisms for this species and others.

The Amendment incorporated into the Forest Plan the reasonable and prudent measures and terms and conditions (TC) identified in the BO. Implementation of the terms and conditions associated with the reasonable and prudent measures will minimize direct adverse effects to Indiana bat and will significantly reduce the potential of incidental take. Specifically, as directed by TC#1, the amendment created management areas and prescriptions (MP 6.3) areas around known Indiana bat hibernacula and identified standards and guidelines to protect swarming areas (5-mile radii around hibernacula) that emphasize Indiana bat and allow for activities compatible with Indiana bat management. In this context Areas of Influence (AOI) for Indiana bats were established within the Forest Plan and are recognized as four distinct areas:

1. Hibernacula (200-foot radius)
2. Maternity sites (2 mile radius)
3. Primary range (primary foraging, summer roosting and fall swarming – 5 mile radius around hibernacula)

Key areas (150 acres within 5 miles of each hibernacula).

Hibernacula – OAs 23.005, 23.006

Indiana bats typically hibernate predominately in karst caves between October and April; the precise dates vary depending upon local weather conditions. During a recent decade, West Virginia saw a 45% increase in the number of hibernating Indiana bats (Wallace pers. comm. 1999), with a total statewide population of approximately 10,770 (Stihler and Wallace 2004).

In most years, approximately 26 West Virginia caves provide adequate Indiana bat winter hibernacula. Eleven hibernacula are within the MNF Proclamation Boundary, but only three (Big Springs Cave, Cave Hollow/Arbogast Cave, and Two-Lick Run Cave {75 miles, 76 miles and 70 miles respectively} from Cherry River) have all or most of their entrances on MNF land. Hellhole cave, a privately owned cave in Pendleton County, is the only WV cave currently designated as Critical Habitat for the Indiana bat (Priority II) (USFWS 1996); it lies within the MNF proclamation boundary, but on private land approximately one mile from national forest land. Hellhole cave is located approximately 71 miles from Cherry River.

Maternity sites – OAs 23.005, 23.006

Female Indiana bats depart hibernacula before males and arrive at summer maternity roosts in mid-May. Some males can remain near the hibernacula year-round (Stihler 1996). Females form small maternity colonies containing up to 100 adults and their young. A single offspring per female is born during June and is raised at the maternity site, usually under loose tree bark (Harvey et al. 1999). Maternity colonies typically use multiple roosts – at least one primary roost used by most bats during summer, and a number of secondary roosts used intermittently and by fewer bats. Thus, some Indiana bat maternity colonies may use more than a dozen roosts (USFWS 1996).

West Virginia is within the Indiana bat's eastern maternity range, but not within the core range.

In August of 1999 a male juvenile Indiana bat was captured near this project area. The Indiana Bat Recovery Plan states that one bat capture does not represent a maternity colony, however the potential for one does exist. Consequently, the Forest implemented a temporary 3-year, 2-mile radius buffer to provide protection to any unidentified maternity colony should it exist. The timing and other climatic factors surrounding this capture might also indicate the bat was in route to its fall hibernacula from a more far removed maternity site. To help further evaluate the significance of this one capture, mist netting and other survey techniques were used in the project area over a 3 year period following this capture. In December 2004 the MNF completed a Status Report for the 1999 Juvenile Male Indiana Bat Capture and submitted this report to USFWS. It was determined that despite an extensive survey effort, no additional evidence of a maternity site existing in the area came forward. Although numerous other species and numbers of bats were captured or observed, no additional Indiana bats have been located since the initial capture of the juvenile Indiana bat. Lacking additional captures of Indiana bats from these surveys, using tried and true methods, it is both reasonable and logical to conclude that no maternity site is located in the immediate area of the 1999 capture. The preponderance of evidence (date of capture, climatic conditions, roost location, single capture) indicates, and USFWS concurs, that the juvenile male was likely a transient or migratory individual. This conclusion is consistent with direction found in the [*Agency Draft Indiana Bat \(Myotis Sodalis\) Revised Recovery Plan*](#).

At the time the programmatic BO was written, there were no documented cases of Indiana bat maternity activity in the state of WV. However, in the summer of 2003, two post-lactating female Indiana bats were captured at a location in Boone County, WV. These captures represented the first documented case of Indiana bat maternity activity in WV. Maternity activity at this site was again confirmed when additional surveys were conducted in the summer of 2004.

In the summer of 2004, a second maternity colony of approximately 25 bats was confirmed through the capture and tracking of a lactating female Indiana bat. This colony was located adjacent to the MNF in Tucker County and is located within 2-miles of a known Indiana bat hibernacula. Generally, the area in which this maternity colony is located is a mixture of forested areas, forest edges, and early successional areas. The maternity roost tree is located in an area that has experienced recent (≈ 5 years) partial timber harvest (high graded) and has been burned due to an escaped fire thus creating a generous number of larger snags with sloughing bark. Protections as provided in the Forest Plan have been implemented with regard to this maternity roost site. These protections include establishing a 2-mile radius buffer ("area of influence") around the maternity site. This capture is approximately 75 miles from Cherry River project area. Thus, the maternity site area of influence falls well outside of the Cherry River project area boundary.

That same summer, three male Indiana bats were captured on another site on the MNF in Pendleton County. These bats were tracked to a roost tree and subsequent emergence counts on that tree revealed 23 bats. Although, maternity activity (through the presence of female Indiana bats) was not confirmed at this site, data suggest that this site may also support a maternity colony. Again, this maternity site falls well outside the Cherry River project area boundary.

In addition to these captures near potential or confirmed maternity colonies, individual male Indiana bats have been captured at a number of locations throughout the state in the following counties: Clay-1 (1999); Nicholas-1 (1999) Fayette/Nicholas County line -1 (2004); Randolph-3 (1999, 2000 and 2002 with a recapture in 2003); Pocahontas -1 (2004); and Raleigh-1 (2003).

Primary Range – MP 6.3 (primary foraging, summer roosting and fall swarming)

On the MNF, foraging, roosting, and swarming are believed to be concentrated within 5 miles of hibernacula, although individual bats can occur outside this area (USFS 2001). Therefore, the Forest Plan has designated areas within 5 miles of hibernacula as “primary range”. The T&E Amendment assigned these areas to **MP 6.3** unless they were previously assigned to another Management Prescription that does not allow programmed timber harvest (e.g. MP 5 – Wilderness). Within this 6.3 Management Prescription, vegetation greater than 5 inches dbh may be managed only for the benefit of the Indiana bat, for other threatened and endangered species habitat, for maintenance or enhancement of natural vegetative communities, or for public safety (Forest Plan, page 190b). Emphasis will focus on management of tree species to provide a continuous supply of suitable roost trees and preferred foraging habitat for Indiana bats

Primary foraging areas: From May to October, Indiana bats forage nightly for terrestrial moths and aquatic insects, primarily in upland forests and riparian woodlands. Prey selection reflects the available foraging environment (Romme et al. 1995). While summer needs are not well understood (USFWS 1997), Indiana bats prefer to forage within upper forest canopy layers where overstory canopy closure ranges from 50-70% (Romme et al. 1995). Indiana bats are known to forage along forest edges, in early successional areas, and along strips of trees extending into more open habitat, but drinking water must be available near foraging areas (Romme et al. 1995). Large open pastures or croplands, large areas with <10% canopy cover, and stands with large unbroken expanses of young (2-5-in dbh), even-aged forests are avoided or are rarely used for Indiana bat foraging (Romme et al. 1995). Field observations suggest that a large amount (63% greater than 60 years old) of the Forest, including the project area, is above optimal canopy closure for Indiana bat foraging habitat (USFS 2001).

Summer roosting: Romme et al. (1995) presented five variables that determine roosting habitat and described the values of these variables that make the most suitable Indiana bat habitat. The optimal forest canopy cover for roosting Indiana bats is 60-80%. The higher the mean diameter of overstory trees, the more suitable the area is for roosting. The abundance of snags indicates current roosting value, so the more snags the better. Percent understory cover indicates how accessible the roost trees are to the bats. A lower percentage means better access to roost sites. Tree structure, specifically the availability of exfoliating bark with roost space underneath, is a critical characteristic for roost trees. Potential roosting habitat, both maternity and non-maternity, is widely available as the MNF is 96 percent forested, with 63 percent of the forested land being more than 60 years old. Trees exhibiting roosting characteristics, such as shagbark and bitternut hickory, red and white oak, sugar maple, white and green ash, and sassafras, are plentiful throughout the Forest and most are found in the project area. Forest Service land within the project area is almost all forested, with nearly 90 percent being greater than 60 years old, indicating abundant potential roosting habitat.

Swarming: Indiana bats begin swarming in preparation for hibernation as early as August and continue through October or November, depending upon local weather conditions. Swarming entails congregating around and flying into and out of cave entrances from dusk to dawn, prior to hibernation (Kiser and Elliot 1996). The MNF provides approximately 203,235 acres of swarming habitat within 5 miles of known hibernacula.

Key Area – OAs 23.005, 23.006

The Forest Plan Amendment also calls for the designation of a Key Area somewhere within the 5-mile radius primary range around each hibernacula. A Key Area consists of a group of mature stands, totaling at least 150 acres, located as close as practical to the hibernacula.

This area should include 20 acres of old growth forest or potential old growth and an additional 130 acres of mature forest. As appropriate, the area should include the area around the cave entrance, area above the cave entrance, foraging corridor and ridge tops/side slopes around the cave.

Status of the Species Within the Action Area

A total of 3 mist net sites have been surveyed near the Western Cherry River project area. Surveys were conducted using the methods outlined in the Service's Indiana bat mist net guidelines. Site selection targeted flight corridors and water sources (ponds, road ruts, streams, bridges, and rivers) and was coordinated with USFWS and WVDNR. This approach is consistent with the terms and conditions outlined in the programmatic BO. As a result of these surveys, a total of 92 bats of several species were captured during efforts in 2000 and 2002. Survey data is available for review at the MNF Supervisors Office. Despite considerable efforts, these surveys did not capture or otherwise identify any Indiana bats, and no evidence of an Indiana bat maternity site existing in the area was detected within the project area.

Hibernacula – OAs 23.005, 23.006

There are no known Indiana bat hibernacula in the Cherry River project area. The nearest Indiana bat caves to the project area are the Martha's cave system, Lobelia Saltpeter and Snedegers Cave which are located on private land more than 15 miles east of the project area. These caves were last surveyed by WVDNR in 2000 and had a total of 282 Indiana bats counted.

Maternity sites – OAs 23.005, 23.006

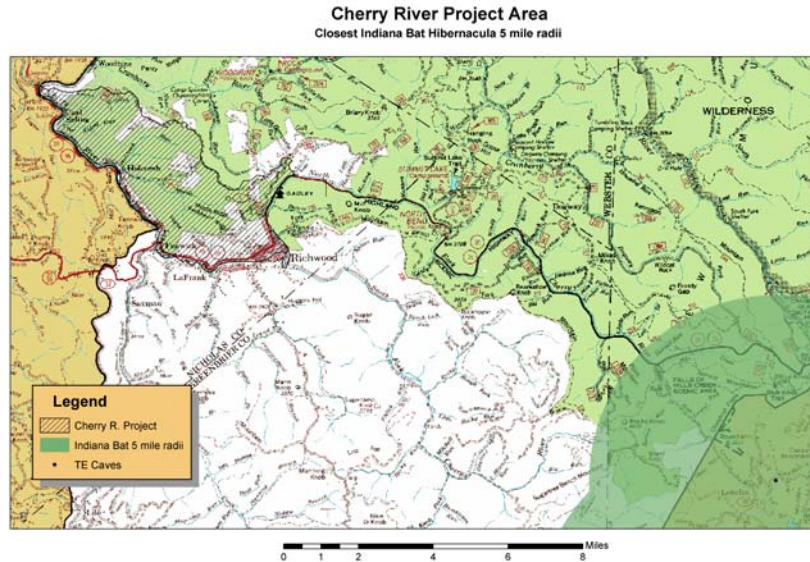
Lacking captures of Indiana bats from the Cherry River sites, using established methods and focusing on preferred habitats, it is both reasonable and logical to conclude that no maternity site is located in the project area.

Primary Range – MP 6.3

There are no primary range (5 mile radius circles) areas on the western side of the Cherry River watershed (nearest circle boundary is approximately 10 miles away), and therefore none within the preferred alternative harvest areas. Swarming activity is believed to be concentrated within 5-mile radii around hibernacula, but Indiana bats may also swarm around cave entrances not necessarily used as hibernacula. The closest non-hibernacula caves to the project area are Williams, Ice, Collison, Herbert Hill, and Horse Pit caves. All these caves are located outside the Cherry River watershed boundary.

Key Area – OAs 23.005, 23.006

There are no Indiana bat hibernacula within the Cherry River project area so therefore there are no Key Areas.



Factors Affecting the Environment of the Species (on the MNF and in the Action Area)

Effects from past management (turn of the century clear-cutting, clear-cuts, thinning, wildlife opening, and roads) have produced the current condition, which provides considerable potential roosting habitat for the Indiana bat. At present, 6% (523 acres) of the project area is non-forested and the remaining 94% (8851 acres) of the area is forested. Most of this forested area is mixed hardwoods. Within the existing non-forested lands, other projects have produced upland water sources, such as wildlife ponds that benefit bats, and openings that are producing small amounts of edge exposed to solar radiation, which could benefit maternity roosts. Since 1986, a total of 540 acres have been harvested on Forest Service lands within the action area, in three timber sales.

Effects of the Action

Direct, Indirect and Cumulative Effects

Hibernacula – OAs 23.005, 23.006

There would be no direct, indirect or cumulative affects to Indiana bat hibernacula with implementation of any activities identified in Alternative C because there are no hibernacula sites within the Cherry River watershed.

Maternity sites – OAs 23.005, 23.006

There would be no direct, indirect or cumulative affects to Indiana bat hibernacula with implementation of any activities identified in Alternative C because there are no known maternity sites within the Cherry River watershed.

Primary Range – MP 6.3

There would be no direct, indirect or cumulative affects to Indiana bat Primary Range with implementation of any activities identified in Alternative C because there are no known MP 6.3 areas near the Cherry River watershed.

The direct effects of these action alternatives are that tree removal during the non-hibernation period (April 1 - November 14) may result in mortality (take) of an individual roosting Indiana bat, if a tree that contains a roosting bat is removed intentionally or felled accidentally. If a bat using a roost tree that is removed is not killed during the removal, the roosting bat would be forced to find an alternative tree, potentially expending a significant amount of energy that would result in harm or harassment of the individual. This also constitutes take.

The Forest has considered a range of alternatives, including harvesting during the hibernation period. Due to other resource and economic issues, scheduling activities to avoid all potential take is not feasible. However, all proposed activities fall within the scale and the scope addressed in the programmatic BO and within the level of take identified in the Incidental Take Statement. In order to further minimize the level of take, known Indiana bat roost trees are protected under Forest Plan standards and guidelines. Also, under Alternative C helicopter logging will be used on approximately 1092 acres (MP 3.0) and will occur during the hibernation period. No activities are planned for any primary range (MP 6.3) areas.

Except for removing potential roost trees, commercial thinning may indirectly benefit Indiana bats by reducing canopy closure to a more optimal level for Indiana bat foraging. This beneficial effect is the primary intent of these harvest units. In this instance the Opening up canopy cover improves foraging as well as roosting conditions.

These effects are short-term, because canopy closure occurs in approximately 5-10 years after thinning occurs. A more long-term effect of thinning is increased residual growth on the remaining trees, creating larger diameter and more suitable roost trees. Damage to residual trees during felling can also improve roosting quality and quantity as damage areas turn to cavities and crevices are more likely to develop due to resulting pathogen and insect attack at the injury point.

Effects of timber stand improvement work within the primary range are discountable because only small trees (not roost size) are cut during TSI. This would indirectly increase future Indiana bat habitat suitability. Creating openings require removing trees, which would have the effects similar to those described for clear-cut harvests. Although maintenance and creation of habitat improvements may remove potential roost trees, they can increase Indiana bat habitat suitability. Herbaceous vegetation, forest edges, and less dense forest canopies created by and around openings provide additional quality foraging areas. Herbaceous areas yield different insect assemblage throughout the year, compared to insect hatches in closed canopy forests.

Road management activities require some tree felling. The effects described for regeneration harvesting apply to road management.

MP 3.0

Harvest activities will take place on approximately 1698 acres. This includes 1410 acres of commercial thinning, 197 acres of shelterwood and clear-cut harvests, 81 acres of single tree selection harvest, 10 acres of partial harvest savannah, and 18 acres of landings which could be converted to wildlife openings. Tree felling activities which occur outside of the hibernating period (approximately 606 acres) would have the potential for take, whether they occur inside or outside the primary range. Thinning, TSI, road management and log landings within the MP 3.0 area would have similar effects as described under the MP 6.3 (Primary Range) area.

Regeneration harvesting within MP 3.0 would affect potential foraging, roosting and migratory habitat by reducing canopy closure below optimal levels (Indiana bats prefer to forage within upper forest canopy layers where overstory canopy cover ranges from 50-70% (Romme et al. 1995). These effects would last about 20 years until the canopy closes again. Potential roost trees would be removed and future roost tree availability could be reduced by large tree removal. Shelterwood harvests leave more potential roost and maternity trees per acre than clearcutting. The effect of potential roost tree loss would last several decades until trees in the regenerated areas reach roost tree size. Effect to roost tree loss would be reduced by retaining residual basal area in the shelterwood harvest units and by retaining cull trees, snags, and all shagbark hickories required by the Forest Plan.

Cumulative Effects

Timber harvesting and associated actions such as road construction, has taken place in the Cherry River watershed both before and after National Forest ownership. These timber sales include regeneration and intermediate (thinning) harvests and road construction. Since 1986, an estimated 11,840 acres of private land in the watershed has been impacted by timber harvesting. On private land, partial harvesting is more common than regeneration harvests. It is expected that timber harvesting will continue on private lands in the foreseeable future at about the same rate as has been occurring in the past decade. Some private land within the watershed is in pasture and other agricultural uses. These uses are likely to continue in the future, and could include herbicide or pesticide use.

Housing construction has been concentrated within the Cherry River composite sub-watershed and near the towns around Richwood. Both year-round and seasonal residences are found and being built within the watershed. We cannot predict the changes likely in housing construction in the watershed, however no large developments are known.

Future Federal, State, local and private actions that are reasonably certain to occur within the Action area, will most likely either be carried out by, or will require a permit from, the Forest Service. These actions will therefore require a section 7 consultation. The Forest Service is not aware of any future State, local, or private actions that could occur within the action area that would not be subject to a section 7 review. Therefore, cumulative effects, as defined in the ESA, are not expected to occur within the action area.

Determination: May Affect, Likely To Adversely Affect. No effects beyond those previously disclosed and addressed in the *Revised Biological Assessment* (USDA 2001) and *Biological Opinion* (USFWS 2002).

CERULEAN WARBLER

FWS has received a petition to consider the listing of the cerulean warbler. This warbler is listed as a sensitive species on some Forests within Region 9. However, this species is considered locally common on the Monongahela National Forest. A risk assessment was completed for this species and is available in the MNF Supervisors Office. This risk assessment concluded that there was no need to include the cerulean warbler as a R9 Sensitive Species on the MNF. Consequently, effects to this species are not analyzed in this BE.

Regional Forester's Sensitive Species

ANALYSIS OF EFFECTS

Conclusions made in the LOO table dictate the level of analysis needed for each sensitive species. Any Region 9 Sensitive Species determined not to occur or unlikely to occur in the project area due to lack of habitat is not carried in further analysis. Effects analysis is completed for all sensitive species that occur or could possibly occur within the project area. Table 2 summarizes LOO table results. An evaluation of direct, indirect, and cumulative effects from the preferred alternative is made for these species. Sensitive species have been grouped into habitat types for effects analysis. The key to determining effects is evaluating how each alternative affects species habitat and in particular, how alternatives affect factors that limit a species' ability to thrive (limiting factor).

Evaluated Species Survey Information

Species information was collected from WV Natural Heritage Program database, district records, Combined Data System information, Ecological Classification System database and predictive vegetation associations, soil maps, Geographical Information System library, research literature, field surveys, and personal communication with specialists to determine each species' occurrence or likelihood of occurrence in this project area. All specialists' reports, maps and survey information are located in the Cherry River project file at the Supervisors Office, Elkins WV.

The following species are known to occur within the Cherry River watershed area: candy darter, New River shiner, Kanawha minnow, Northern goshawk, Allegheny woodrat, Southern rock vole, hellbender, green salamander, large flowered Barbara's button, blunt-lobed grapefern, and long stalked holly. These species along with the other sensitive animal and plant species that may occur in the area are listed in the habitat sections of this document.

Table 4: Regional Forester Sensitive Species List. Habitat related to Western Cherry River Watershed Area.

Species	Occupied habitat	Suitable habitat: unknown occupancy	No suitable habitat
BIRDS			
Migrant loggerhead shrike (<i>Lanius ludovicianus migrans</i>)		X	
Northern goshawk (<i>Accipiter gentilis</i>)		X	
Peregrine falcon (<i>Falco peregrinus anatom</i>)			X
MAMMALS			
Allegheny woodrat (<i>Neotoma magister</i>)	X		
Eastern small-footed bat (<i>Myotis leibii</i>)		X	
Southern rock vole (<i>Microtus chrotorrhinus carolinensis</i>)	X		
Southern water shrew (<i>Sorex palustris punctulatus</i>)		X	
AMPHIBIANS			
Green salamander (<i>Aneides aeneus</i>)	X		
Hellbender (<i>Cryptobranchus alleganiensis</i>)	X		
REPTILES			
Timber rattlesnake (<i>Crotalus horridus</i>)		X	
MOLLUSKS			
Elktoe (<i>Alasmidonta marginata</i>)			X
Green floater (<i>Lasmigona subviridis</i>)			X
Organ Cavesnail (<i>Fontigens tartarea</i>)			X
INSECTS			
A cave beetle (<i>Pseudanophthalmus fuscus</i>)			X
A cave beetle (<i>Pseudanophthalmus hypertrichosis</i>)			X
A tiger beetle (<i>Cicindela ancocisconensis</i>)		X	
Appalachian grizzled skipper (<i>Pyrgus wyandot</i>)			X
Barren's tiger beetle (<i>Cicindela patruela</i>)		X	
A springtail (<i>Pseudosinella gisini</i>)			X
A springtail (<i>Sinella agna</i>)			X
Culver's planarium (<i>Sphalloplana culveri</i>)			X
Diana fritillary (<i>Speyeria diana</i>)		X	
Dry Fork Valley cave beetle (<i>Pseudanophthalmus montanus</i>)			X
Gandy Creek cave springtail (<i>Pseudosinella certa</i>)			X
INVERTEBRATES			
A Cave obligate planarian (<i>Phagocata angusta</i>)			X
An isopod (<i>Caecidotea sinuncus</i>)			X
An isopod (<i>Caecidotea simonini</i>)			X
An underground crayfish (<i>Cambarus nerterius</i>)			X
Cheat Valley cave Isopod (<i>Caecidotea cannulus</i>)			X
Culver's cave isopod (<i>Stygobromus culveri</i>)			X
Dry Fork Valley cave pseudoscorpion (<i>Apochthonius paucispinosus</i>)			X
Germany Valley cave millipede (<i>Pseudotremia lusciosa</i>)			X
Grand Caverns blind cave millipede (<i>Trichopetalum weyeriensis</i>)			X
Greenbrier cave isopod (<i>Stygobromus emarginatus</i>)			X
Greenbrier Valley cave millipede (<i>Pseudotremia fulgida</i>)			X
Hoffmaster's cave flatworm (<i>Macrocotyla hoffmasteri</i>)			X
Holsingers/Greenbrier valley cave isopod (<i>Caecidotea holsingeri</i>)			X
Luray Caverns blind cave millipede (<i>Trichopetalum whitei</i>)			X
Minute cave isopod (<i>Stygobromus parvus</i>)			X
Pocahontas cave isopod (<i>Stygobromus nanus</i>)			X
South Branch Valley cave millipede (<i>Pseudotremia princeps</i>)			X
Timber Ridge cave beetle (<i>Pseudanophthalmus hadenoecus</i>)			X
WV blind cave millipede (<i>Trichopetalum krekeleri</i>)			X
FISH			
Appalachian darter (<i>Percina gymnocephala</i>)		X	
Candy darter (<i>Etheostoma osburni</i>)	X		
Cheat minnow (<i>Rhinichthys bowersi</i>)		X	
Kanawha minnow (<i>Phenacobius teretulus</i>)		X	
New River shiner (<i>Notropis scabriceps</i>)		X	
Pearl dace (<i>Margariscus margarita</i>)		X	
Redside dace (<i>Clinostomus elongatus</i>)			X
PLANTS			

Species	Occupied habitat	Suitable habitat: unknown occupancy	No suitable habitat
Ammons tortula (<i>Tortula ammonsiana</i>)			X
Appalachian blue violet (<i>Viola appalachiensis</i>)		X	
Appalachian oak fern (<i>Gymnocarpium appalachianum</i>)		X	
Arctic bentgrass (<i>Agrostis mertensii</i>)			X
Blue Ridge St. John's wort (<i>Hypericum mitchellianum</i>)			X
Blunt-lobed grapefern (<i>Botrychium oneidense</i>)		X	
Bog buckbean (<i>Menyanthes trifoliata</i>)		X	
Box huckleberry (<i>Gaylussacia brachycera</i>)			X
Bristle fern (<i>Trichomanes boschianum</i>)			X
Butternut (<i>Juglans cinerea</i>)		X	
Canada mountain ricegrass (<i>Oryzopsis canadensis</i>)			X
Canby's mountain lover (<i>Paxistima canbyi</i>)			X
Cooper's milkvetch (<i>Astragalus neglectus</i>)			X
Crested coralroot (<i>Hexalectris spicata</i>)		X	
Darlington's spurge (<i>Euphorbia purpurea</i>)		X	
Fraser fir (<i>Abies fraseri</i>)			X
Highland rush (<i>Juncus trifidus</i>)			X
Jacob's ladder (<i>Polemonium vanbruntiae</i>)		X	
Kate's mountain clover (<i>Trifolium virginicum</i>)			X
Lance leaf grapefern (<i>Botrychium lanceolatum</i>)			X
Large-flowered Barbara's buttons (<i>Marshallia grandiflora</i>)	X		
Lillydale onion (<i>Allium oxypilum</i>)			X
Long-stalked holly (<i>Ilex collina</i>)	X		
Netted chain fern (<i>Woodwardia areolata</i>)		X	
Nodding pogonia (<i>Triphora trianthophora</i>)		X	
Robust fire pink (<i>Silene virginica</i> v. <i>robusta</i>)			X
Rock skullcap (<i>Scutellaria saxatilis</i>)		X	
Sand grape (<i>Vitis rupestris</i>)			X
Showy lady's slipper (<i>Cypripedium reginae</i>)			X
Virginia/yellow (<i>Paronychia virginica</i> v. <i>virginica</i>)			X
Smokehole bergamot (<i>Monarda fistulosa</i> v. <i>brevis</i>)			X
Spreading rockcress (<i>Arabis patens</i>)			X
Swamp lousewort (<i>Pedicularis lanceolata</i>)		X	
Sweet-scented Indian plantain (<i>Hasteola suaveolens</i>)			X
Swordleaf phlox (<i>Phlox buckleyi</i>)			X
Tall larkspur (<i>Delphinium exaltatum</i>)			X
Tennessee pondweed (<i>Potamogeton tennesseensis</i>)		X	
Thread rush (<i>Juncus filiformis</i>)			X
Turgid gay feather (<i>Liatris turgida</i>)			X
White alumroot (<i>Heuchera alba</i>)			X
White monkshood (<i>Aconitum reclinatum</i>)		X	
White mountain silverling (<i>Paronychia argyrocoma</i>)			X
Yellow buckwheat /shalebarren wild buckwheat (<i>Eriogonum alleni</i>)			X

Animals

Riparian/Stream Species

Numerous smaller intermittent and ephemeral streams occur throughout the project area. In particular, steep slopes, coves, and riparian areas should be considered sensitive from the standpoint of erosion, aquatic and riparian resource effects, and the potential to influence the hydrologic function of the watersheds and stream channels themselves.

The aquatic/riparian zones in the project area provide potential habitat for the following sensitive species:

Species	Limiting factor
Hellbender	Low water quality
Candy darter	Low water quality
New River shiner	Low water quality
Kanawha minnow	Low water quality
Southern rock vole	Disturbance to individuals or habitat
Southern water shrew	Disturbance to individuals or habitat
Eastern small footed bat	Disturbance to individuals or habitat
A tiger beetle	Disturbance to individuals or habitat
Long-stalked holly	Disturbance to individuals or habitat
Large-flowered Barbara's button	Disturbance to individuals or habitat
White Monkshood	Disturbance to individuals or habitat

Direct/Indirect/Cumulative Effects

Activities that disturb soils can increase stream sedimentation and lead to various forms of aquatic habitat degradation. Soil disturbing activity can have direct, indirect, and cumulative effects on aquatic and riparian resources and these effects can be variable in terms of the extent and duration of effects.

Soil disturbing activities associated with Action alternatives include construction, reconstruction, maintenance, and use of roads (system, temporary, and skid roads) and landings (log and helicopter landing sites) and to a limited extent, timber harvests. Other management activities are generally designed to avoid direct effects on stream channels.

Road construction can have long-term effects to streams and riparian areas because the mere presence of roads on the landscape can influence watershed processes and functions. Roads that intercept surface and subsurface flows and expedite delivery of this water to streams can affect stream flow conditions, particularly storm flow and peak flow characteristics. Roads within riparian areas and floodplains can inhibit stream and floodplain function and physically occupy riparian habitat.

Roads that cross stream channels can disconnect aquatic habitat, change stream channel dynamics in the vicinity of the crossing, and contribute toward channel instability. All these effects can alter the quality of habitat for many terrestrial and aquatic species that inhabit these areas.

Timber harvesting can affect watershed processes that are important to maintaining the health of many aquatic and riparian dependent communities. Extensive timber harvesting and associated activity throughout a watershed can affect stream flow conditions, particularly storm flow and peak flow characteristics during the growing season.

Vegetation treatments such as timber harvesting can affect watershed processes that are important to maintaining the health of many aquatic and riparian dependent communities. Timber harvesting in riparian areas and areas adjacent to ephemeral channels can reduce the potential to recruit woody debris to streams and alter species composition in these areas. Canopy reductions adjacent to stream channels can also increase exposure to solar radiation, which can elevate stream temperatures, change microhabitat characteristics, and modify associated biotic communities. Extensive timber harvesting and associated activity throughout a watershed can affect stream flow conditions, particularly storm flow and peak flow characteristics during the growing season.

In order to address these issues, riparian buffers have been prescribed for units that contain or are adjacent to perennial or non-perennial stream channels. The following table represents default buffer widths to be applied to both sides of the channel.

Stream Classification	Buffer Width
Perennial	100 feet
Large Intermittent (>50 acre drainage area)	100 feet
Small Intermittent (<50 acre drainage area)	50 feet
Ephemeral	25 feet

Buffer widths may be adjusted based on interdisciplinary review and site-specific field investigation. The buffers shall, at a minimum, encompass the riparian area defined on the basis of soils, vegetation and hydrology and the ecological functions and values associated with the riparian area.

No programmed timber harvest shall occur within the channel buffers identified in the above table. Tree removal from the buffers may only take place if needed to meet aquatic or riparian resource management needs, or to:

- a) Provide habitat improvements for aquatic or riparian species, or threatened, endangered, sensitive, and locally rare species;
- b) Provide for public or worker safety;
- c) Construct or renovate an approved facility;
- d) Construct road, skid road, or utility corridor crossings;
- e) Conduct aquatic or riparian-related research,

Oak/Mast Tree Release within Riparian Areas

- a) Release a maximum of 50 crop trees per acre for an area within 25 feet of ephemeral streams. Release a maximum of 25 crop trees per acre for an area within 50 feet of intermittent streams and within 100 feet of perennial streams.
- b) Cut stems would be directionally felled toward the stream when concerns for protecting the residual stand would permit.

Risk of direct, indirect, and cumulative effects to aquatic and riparian resources from activities contained in Alternative C are managed with site specific project design features that help address issues of concern. If Alternative C were implemented without the use of site specific mitigation measures, Forest Plan Standards and Guidelines, and Best Management Practices (BMPs) there would be substantial adverse effects to aquatic and riparian habitats.

Poorly designed or improperly placed stream crossings as well as inadequate stream filterstrips would degrade aquatic habitat and reduce water quality by adding sediment to streams. Poorly designed skid trails and log landings would generate large quantities of eroded soil. This eroded soil would overwhelm filterstrip effectiveness and result in increased stream sedimentation. Inadequate riparian area management practices would affect wildlife habitat quality, reduce future sources of large woody debris for streams, and further destabilize the bed and banks of stream channels. Extensive and heavy levels of harvesting and road building would likely increase storm flows and potentially some peak flows and would further destabilize stream channels.

Determination: Alternative C is expected to have the following effect on Region 9 Sensitive Fish species: **“may impact individuals but not likely to cause a trend to federal listing or a loss of viability”** Impacts on Region 9 Sensitive terrestrial animal species inhabiting riparian habitats will either experience **“no impacts”** or **“may impact individuals but not likely to cause a trend to federal listing or a loss of viability”**. Alternative C is expected to have “no impact” on these terrestrial animal species as the riparian areas that they inhabit will not be disturbed directly, indirectly, or cumulatively under this alternative.

Rocky Habitat Species

There are quite a few stands with rock outcrops and ledges; however this habitat is not abundant within the harvesting units. The rock material has the potential for many holes and crevices that provide potential habitat for the following species:

Species	Limiting Factor
Southern rock vole	Disturbance to habitat
Eastern small-footed bat	Disturbance during hibernation
Allegheny woodrat	Disturbance to habitat
Timber rattlesnake	Disturbance during hibernation and direct killing of individuals
Green salamander	Disturbance to habitat
Barren’s tiger beetle	Disturbance to individuals or habitat

Potential Effects

Timber harvesting could cause direct disturbance as the removal of trees on or near outcrops increases sunlight and winds, changing the microclimate of the rocky areas. This would cause an increase in ground vegetation and a general drying effect.

Some species associated with rock habitats are found in other areas in the forested landscape and are sensitive to changes in micro site conditions such as opening of the canopy, increasing allowable light and change in species composition with changes in ability to compete.

Alternative C will affect a few stands with rocky outcrops. For most of these areas thinning will be the proposed silvicultural treatment which will minimize the effects to this habitat. The small impact associated with Alternative C would have little direct, indirect, or cumulative impact to these species and their habitat.

Individuals occurring outside of these protected habitats and within units may be adversely impacted by the action alternatives. However, the probability of this adverse impact is extremely low.

Determination: Impacts on RFSS inhabiting rocky habitat types will experience “**may impact individuals but not likely to cause a trend to federal listing or a loss of viability**” under **Alternative C.**

Mature Forest Species

The Cherry River area was not designated to function as large-scale future old growth ecosystem, however, it was designated to meet wildlife habitat goals. In this area, designated “old growth” stands function as future mature habitat areas scattered throughout the more heavily managed landscape. The age class distribution in the project area is somewhat typical of the entire MNF in that about half of the area is in stands between 70-100 years old. The mature forest in the project area provides potential habitat for the following sensitive terrestrial animals:

Species	Limiting factor	
Eastern small-footed bat	Disturbance to individuals or habitat.	
Diana fritillary	Disturbance to individuals or habitat. Insecticide application	
Green salamander	Disturbance to habitat	
Timber rattlesnake	Disturbance during hibernation and direct killing of individuals	
Northern goshawk	Disturbance during nesting	
White monkshood	Disturbance to individuals or habitat	Pot enti

al effects to these habitats from proposed activities comes from timber harvest which changes the forest stand age, forest structure, opens up the forest canopy, increases light to the forest floor, changes the microclimate of the area and creates soil disturbance that could destroy sensitive plants or allow for non-native competition.

Timber harvest effects on mature habitat and species

Direct effects due to timber harvest activity on many of the R9SS include directly crushing individuals, collisions with vehicles or purposefully killing an individual (timber rattlesnake in particular) or permanently removing their territories.

Indirect effects on Diana fritillary and green salamander would be similar. Timber harvesting would remove canopy, potentially changing forest floor micro-climate. Decreasing soil moisture may deem those harvest units unsuitable to all these species.

Historic goshawk nesting has been observed within the eastern portions of the Cherry River watershed but no active nesting has been observed in the last 5-7 years. These nests are located approximately 12 miles from the nearest proposed cutting unit. Goshawk Call Surveys were completed within the proposed action areas in the spring of 2005 with no responses. Implementation of Alternative C is expected to have little effect on this species.

Timber harvesting from April thru October would have the greatest probability of directly affecting rattlesnakes. During timber harvesting, falling trees may crush rattlesnakes. There would also be increased probability of threat to snakes due to increase human activity in the area while harvesting. Timber harvesters do not generally tolerate rattlesnake in the area where they are working. Indirectly, timber harvesting may benefit rattlesnakes by increasing food resources. Small mammal populations are higher in open wooded areas with an abundance of forest floor vegetation (Kirkland and Krim 1990). In addition, increases in coarse woody debris on the forest floor provides good habitat for both timber rattlesnake and their prey species.

Timber cutting may improve eastern small-footed bat foraging areas as the canopy opens and allows the bats to forage more easily. Additionally this would create more edge habitat suitable for summer foraging.

Direct effects due to road management activity on Diana fritillary and green salamander, include crushing individuals with equipment, collisions with vehicles or purposefully killing an individual (timber rattlesnake in particular) or permanently removing their territories.

Indirectly, road management may benefit Diana fritillary as they tend to utilize roadsides in search of nectar bearing plants. Indirectly, roads create barriers to salamander movement and dispersal (DeMaynadier and Hunter 1995), and prevent genetic exchange between fragmented populations. Green salamanders have been found in the Holcomb Run sub-watershed. Green Salamanders can be found in and around rock formations and can occur under rotting bark and logs. Both these habitat types can be found within the project area. Green salamander surveys were not conducted in the project area, however indirect affects to green salamanders is expected to be negligible.

Road management activities may have both adverse and beneficial affects to area rattlesnakes. Reconstruction activities may directly affect individuals if they are present during heavy equipment use. Effects may be due to equipment or equipment operators directly killing a snake if they see it. On the other hand, roads act as travel lanes for small mammals, providing snakes with additional hunting areas. Snakes may also use roads to sun themselves during the day.

Road construction/reconstruction requires some timber removal; however this activity would have no direct effect on eastern small-footed bats. These bats roost in rock crevices and caves during daylight hours when road construction and road use take place. Indirectly, roads within the project areas provide travel corridors and the increased edge provides foraging areas for bats. Bats would also take advantage of standing water found in road ruts.

Overall the effects of Alternative C on mature habitats and populations due to timber harvest would be extremely negligible and short-term. Mature community viability would be maintained and no adverse effects on sensitive species would be expected.

Determination: Impacts on RFSS inhabiting Mature habitats will experience “**may impact individuals but not likely to cause a trend to federal listing or a loss of viability**” under Alternative C.

Disturbed Habitat Species

Disturbed habitats within the project area include young timber stands, landings and roadsides that provide either exposed soils, grass/forbs or seedling/sapling seral stages that allow more light to reach the under-story than does a forested stand. There are approximately 186 acres currently classified as either open/brush (23 acres) or seedling/sapling (163 acres), and approximately 35 miles of roads on National Forest lands within and around the project area. Disturbed areas in the Cherry River project area provide potential habitat for the following sensitive species:

Species	Limiting factor
Migrant loggerhead shrike	Disturbance to individuals or lack of suitable habitat
Timber rattlesnake	Disturbance during hibernation and direct killing of individuals
Diana fritillary	Disturbance to individuals or lack of suitable habitat
Barren’s Tiger beetle	Disturbance to individuals or lack of suitable habitat
White monkshood	Disturbance to individuals or habitat

One sensitive species, the Diana fritillary could benefit from all types of disturbed habitats. The Migrant Loggerhead Shrike could also benefit from the created openings and their associated edge habitat.

Potential Effects

Timber harvesting creates disturbed habitat by opening up the canopy and exposing the soils. This habitat however is temporary, usually for about 15-25 years, until the canopy is again closed and forest litter or vegetation covers the exposed soils.

In the Preferred Action landings, which could be converted to wildlife openings will result in 18 acres of permanent disturbed habitat as it is maintained in the grass/forb stage. Road reconstruction (1.3 miles) disturbs ground and opens up the forest canopy.

Timber harvest effects on disturbed habitat and species

Direct effects due to timber harvest activity on Migrant loggerhead shrike, timber rattlesnake, Diana fritillary and Barren’s tiger beetle include directly crushing individuals, collisions with vehicles or purposefully killing an individual (timber rattlesnake in particular) or permanently removing their territories while management activities are taking place.

Indirectly, timber harvesting would remove canopy, creating more suitable “disturbed” or open areas. This habitat is temporary, usually for 15-25 years, until the canopy is closed and forest litter or vegetation covers exposed soils.

Road Management effects on disturbed habitat and species

Direct effects due to road management activities on Migrant loggerhead shrike, timber rattlesnake, Diana fritillary and Barren’s tiger beetle include directly crushing individuals, collisions with vehicles or purposefully killing an individual (timber rattlesnake in particular) or permanently removing their territories while management activities are taking place.

Road reconstruction disturbs ground and opens up the forest canopy, creating a permanent edge affect along the road perimeter. This will indirectly benefit species associated with disturbed habitats.

Increased acres of disturbed habitat as a result of the action alternatives may benefit the Diana fritillary. The increase in open and edge habitat could also be beneficial to the Migrant Loggerhead Shrike.

Determination: Impacts on RFSS inhabiting disturbed habitats type will experience “**may impact individuals but not likely to cause a trend to federal listing or a loss of viability**” under the Preferred Action.

Terrestrial Plants

Species of Riparian/Bog/Swamp Habitat

From table 2, the sensitive plant species likely or known to occur in the project area that are found mainly in riparian or swampy habitat are: white monkshood, blunt-lobed grapefern, bog buckbean, Darlington’s spurge, Jacob’s ladder, large flowered Barbara’s buttons, long stalked holly, netted chain fern, swamp lousewort, and Tennessee pondweed. Possible direct effects to these plants from the proposed action or alternative C include loss of habitat as roads are constructed, alteration of habitat from regeneration harvest, and loss of individuals. No activities are planned near the known locations of large flowered Barbara’s buttons or long stalked holly. For other species, the riparian area standards will protect habitat from direct and indirect impacts of management actions. If individuals of these species were missed during surveys, these standards will also protect individuals. There will be no direct, indirect or cumulative negative impacts to sensitive plant species requiring riparian habitat. For white monkshood, habitat may be created during road construction or reconstruction as we are finding more and more individuals of this species along road cuts where road construction has interrupted sub-surface flow creating a wet area suitable for this plant and the filtered sunlight encourages flowering.

Determination: Impacts from the preferred action on RFSS inhabiting riparian areas “may impact individuals but are not likely to cause a trend to federal listing or a loss of viability”.

Species of Rocky Habitats

Rock skullcap is the only RFSS plant species of rocky habitats likely to be in the project area; however none were located in surveys made in the area through the years. Possible direct effects

to these species from the proposed action or alternative C include loss of habitat as roads are constructed, alteration of habitat from regeneration harvest, and loss of individuals. In other watersheds where this plant is found, the habitat is large boulders in moist forests or smaller rocks along streams. The plants found on top of rocks could be affected by the regeneration harvest temporarily as the light and moisture conditions are altered. If individuals in riparian areas were missed during surveys, riparian area standards will help protect these plants and habitat. Direct, indirect, and cumulative negative effects to this species' habitat are minor and short-term.

Determination: Impacts from the preferred action on RFSS inhabiting riparian areas “may impact individuals but are not likely to cause a trend to federal listing or a loss of viability”.

Species of Rich Woods

Butternut and nodding pogonia are considered species tied to forests with rich soil conditions. Neither species was found during field review however some parts of the project area may have generally rich in nutrients. Possible direct effects from either the proposed action or alternative include loss of habitat as roads are constructed, alteration of habitat from regeneration harvest, and loss of individuals.

Butternuts, if found while marking areas for regeneration or thinning, could easily be left as reserve trees. The direct effects of thinning or regeneration harvest on butternuts would be positive as these trees need open conditions to regenerate.

Determination: Impacts from the preferred action on RFSS inhabiting riparian areas “may impact individuals but are not likely to cause a trend to federal listing or a loss of viability”.

Species of General Forested Habitat

Habitat for Appalachian blue violet it possibly found in the project area. This species prefers a wide range of conditions. Possible direct effects from either the proposed action or alternative include loss of habitat as roads are constructed, alteration of habitat from regeneration harvest, and loss of individuals. Appalachian blue violets do tolerate partial shade, so thinning actions would not have negative effects to habitat.

Determination: Impacts from the preferred action on RFSS inhabiting riparian areas “may impact individuals but are not likely to cause a trend to federal listing or a loss of viability”.

Summary of Determinations

In summary, based on the above effects analysis for species and habitat types, it is my professional opinion that implementing Alternative C of the Cherry River Timber Analysis:

1. Will have “no effect” on: WV northern flying squirrel, Virginia big-eared bat, Cheat mountain salamander, Virginia spiraea, or running buffalo clover, or shale barren rock cress.

2. May Affect, Not Likely to Adversely Affect the: Bald eagle, small-whorled pogonia.
3. For the Indiana bat there will be May Affect, Likely to Adversely Affect. No effects beyond those previously disclosed and addressed in the *Revised Biological Assessment* (USDA 2001) and *Biological Opinion* (USFWS). The anticipated effects from the proposed project are similar to those anticipated in the programmatic Biological Opinion. Incidental Take may occur as a result of harvesting 1698 acres and 3.1 miles of road construction and reconstruction as a result of this project. Any take that may occur as a result of the project is within that authorized by the Incidental Take Statement found in the Biological Opinion.
4. It is also concluded that the implementation of the Preferred Action (Alternative C) will not lead to the loss of viability, or cause a trend to federal listing, of any of the sensitive species that may utilize habitat types within the Cherry River project area.

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