



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Twin Cities Field Office  
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Bloomington, Minnesota 55425-1665

July 9, 2015

Ms. Brenda Halter  
Forest Supervisor  
Superior National Forest  
8901 Grand Avenue Place  
Duluth, Minnesota 55808-1102

FWS No. 03E19000-2015-F-0116  
Formal Consultation on Northern Long-eared Bat

Dear Ms. Halter:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion and is based on our review of the Superior National Forest's (Forest) proposed Implementation of On-Going Recreation, Special Uses and Minerals Exploration Projects Biological Assessment and potential effects to the northern long-eared bat (*Myotis septentrionalis*). The biological assessment, dated April 28, 2015, and letter requesting formal consultation on the proposed Implementation of On-Going Recreation, Special Uses and Minerals Exploration Projects were received in our office on April 28, 2015.

This biological opinion is based on the best available scientific and commercial data including meetings, electronic mail and telephone correspondence with Superior National Forest officials, Service files, pertinent scientific literature, discussions with recognized species authorities, and other scientific sources. A complete administrative record is on file at the Twin Cities Ecological Services Field Office.

Please contact the Service if the project changes or new information reveals effects of the proposed action to proposed or listed species or critical habitat to an extent not covered in your biological assessment. If you have any questions or comments on this biological

opinion, please contact Mr. Andrew Horton, Fish and Wildlife Biologist, at 612-748-3548 ext. 2208, or via email at [andrew\\_horton@fws.gov](mailto:andrew_horton@fws.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Peter Fasbender". The signature is fluid and cursive, with a large initial "P" and "F".

Peter Fasbender  
Field Supervisor

Enclosure

cc: Susan Catton, Forest Biologist  
Melissa Grover, Forest Biologist

# BIOLOGICAL OPINION

## Effects to the Northern Long-eared Bat from Implementation of On-Going Recreation, Special Uses and Minerals Exploration Projects involving limited tree removal on the Superior National Forest

FWS TAILS Code: 03E19000-2015-F-0116

Prepared by:  
U.S. Fish and Wildlife Service  
Twin Cities Field Office

July 9, 2015

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## INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (BO) based on our review of the U.S. Forest Service's proposed activities on the Superior National Forest (USFS or Forest), and their effects on the northern long-eared bat (*Myotis septentrionalis*; NLEB) in accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The USFS' request for consultation was received on March 23, 2015, and the Biological Assessment (BA) on the proposed activities on Superior National Forest was received on April 28, 2015. The USFS determined that all activities addressed in the BA are unlikely to result in adverse effects to Canada lynx (*Lynx canadensis*) or have had prior coordination/consultation for that species. Additional consultation will be necessary for the gray wolf (*Canus lupus*), but the consultation for that species will occur at a later time. Therefore, this BO addresses one species, the NLEB.

This BO is based on information provided in the BA. A complete administrative record of this consultation is on file at the Service's Twin Cities Field Office.

### **Interim 4(d) for the northern long-eared bat**

On April 2, 2015, the Service has published a species-specific rule pursuant to section 4(d) of the ESA for NLEB (80FR2371). Section 4(d) of the ESA states that:

*Whenever any species is listed as a threatened species ... the Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation of such species* (16 U.S.C. 1533(d)).

The Service's interim 4(d) rule for NLEB exempts the take of NLEB from the section 9 prohibitions of the ESA, as follows:

- (1) Take that is incidental to forestry management activities, maintenance/limited expansion of existing rights-of way, prairie management, projects resulting in minimal (<1 acre) tree removal, provided these activities:
  - a. Occur more than 0.25 mile (0.4 km) from a known, occupied hibernacula;
  - b. Avoid cutting or destroying known, occupied roost trees during the pup season (June 1–July 31); and
  - c. Avoid clearcuts (and similar harvest methods, *e.g.*, seed tree, shelterwood, and coppice) within 0.25 (0.4 km) mile of known, occupied roost trees during the pup season (June 1–July 31).
- (2) Removal of hazard trees (no limitations).
- (3) Purposeful take that results from
  - a. Removal of bats from and disturbance within human structures and
  - b. Take resulting from actions relating to capture, handling, and related activities for northern long-eared bats by individuals permitted to conduct these same activities for other species of bat until May 3, 2016.

Thus, any take of NLEB occurring in conjunction with these activities that complies with the conservation measures, as necessary, is exempted from section 9 prohibitions by the interim 4(d) rule, and does not require incidental take authorization. Note that no conservation measures are required as part of the interim 4(d) in areas with no known roost trees and no known hibernacula. While the Forest currently has a limited amount of known roost trees or hibernacula, locations may increase as survey efforts continue. The Forest will incorporate each of the conservation measures into its proposed actions in the event that a new roost tree or hibernaculum is identified in the future.

However, the interim 4(d) rules do not afford exemption from the ESA's section 7 procedural requirements. Therefore, consultation remains appropriate when actions (even those within the scope of the interim 4(d) rule) are funded, authorized or carried out by a federal agency. This is because the purpose of section 7 consultation is broader than the mere evaluation of take and issuance of an Incidental Take Statement; such consultations fulfill the requirements of section 7(a)(2) of the ESA, which directs that all federal agencies insure that their actions are not likely to jeopardize the continued existence of any listed species, or result in the destruction or adverse modification of designated critical habitat.

### **Consultation History**

The Forest initially requested conferencing for the NLEB on two batched projects that involve issuance of Special Use Permits for activities with limited tree removal and submitted Biological Assessments on February 6, 2014 and January 12, 2015. The Service issued an informal conference report (03E19000-2014-IC-0040) on June 17, 2014 for the first BA regarding 20 Special Use Permits (SUP) for temporary and permanent access requests. The Service issued an informal conference report and informal concurrence letter (03E19000-2015-I-0051) on January 27, 2015 for the second BA regarding 12 SUP for forest management, property access and a snowmobile trail reroute. The Chippewa National Forest then provided the Service with a letter, dated March 23, 2015, which was also on behalf of the Chequamegon-Nicolet and Superior National Forests, requesting initiation of conferencing/consultation for NLEB. Specifically, the three Forests requested that if conferencing could not be completed by April 2, 2015, the date for listing NLEB under the ESA, that conferencing be concluded to move into formal consultation. Attached to the letter was a list of 22 projects on all three Forests that were prioritized for subsequent formal consultation. The list included the two SUP BAs previously mentioned, as well as a third BA involving SUP/recreation batched projects that subsequently consolidated all remaining activities involving special use, recreation and minerals exploration projects on Superior National Forest that would continue to be implemented from the previous two BAs after listing. The Service issued a BO for impacts to Canada lynx resulting from the Federal Hardrock Prospecting Permits (2012-F-0014) on March 22, 2012. Based on the need to reinstate consultation for impacts resulting from a new species listing, the NLEB, the Forest batched the reinstatement into this BA. The Service agreed to this course of action and received the BA for these activities on April 28, 2015. The Service is issuing this final BO on July 9, 2015, concluding formal consultation on the Implementation of On-Going Recreation, Special Uses and Minerals Exploration Projects involving limited tree removal. The BA, meetings, telephone

discussions, and email transmissions with Susan Catton, Forest Biologist, and Melissa Grover, Biologist, form the basis for this BO.

## **DESCRIPTION OF THE PROPOSED ACTION**

As defined in the ESA Section 7 regulations (50 CFR 402.02), “action” means “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies in the United States or upon the high seas.” The “action area” is defined as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action.” The direct and indirect effects of the actions and activities must be considered in conjunction with the effects of other past and present federal, state, or private activities, as well as the cumulative effects of reasonably certain future State or private activities within the action area.

The USFS reviewed all their ongoing actions and determined that a total of 27 projects will continue to be implemented after the date when NLEB would be listed. They then reviewed these projects, including their previous consultation documents, to determine how these projects would affect the NLEB. The USFS included conservation measures to minimize potential adverse impacts of various activities as part of their project description. The Service has analyzed the effects of the proposed actions considering that the projects will be implemented as proposed (including all conservation measures). The following project background and area descriptions are summarized from the BA (Attachment A). Additional information on Superior National Forest background and description for each project can be found in the BA and is incorporated by reference.

The Forest proposes to implement on-going recreation, special uses, and mineral exploration projects involving limited tree removal within the Forest boundary, which includes five ranger districts (Gunflint, Kawishiwi, La Croix, Laurentian, and Tofte) in Cook, St. Louis, and Lake Counties, Minnesota. All projects included in the BA were previously signed under “Finding of No Significant Impact” decisions between August 2011 through 2015 or will have decisions made in the near future. Projects included have been scheduled for implementation from April 2, 2015 through 2032.

Tree removal activities will be carried out on about 1,741.5 acres of Federal, State, and private land across Superior National Forest for recreational projects, special use permits, and mineral exploration. Tree removal resulting in indirect or direct impacts to suitable NLEB habitat from road, trail, new building, and transmission line construction and mineral exploration, will be conducted on 426.5 acres. As a result of access provided by special use permits, timber harvest will impact an additional 1,315 acres of suitable NLEB habitat.

The proposed actions include tree removal for the following purposes (the BA provides a full description of each activity on pp. 4-7; see Table 1 below for proposed harvest for each proposed action category):

**1. Recreation Trail Development -**

*Arrowhead Trail* – This project involves creating a new 0.4 mile trail segment to move the existing Arrowhead trail from private property to federal and state property. The abandoned trail segment would be allowed to revegetate. Tree removal for this project would occur between April and September and would impact approximately 0.5 acres of potential bat habitat.

*Mixed use motorized trail* - This activity would occur on existing roads, currently open to vehicle traffic. Some larger tree with overhanging branches would be removed. Tree removal for these projects would occur between October and May only.

*South Fowl Snowmobile Trail* - Motorized use would only occur during the winter and construction would take place between March 1 and September 30. Depending on a final decision on trail route alternatives, habitat removal will total between 2.7 and 3.2 acres. For the analysis in the BA and BO, effects for both alternatives are considered, totaling 5.9 acres of impact. With both alternatives, emphasis will be on putting a winding trail through brushy areas and cutting as few trees as possible to maintain forest overstory.

**2. Temporary and Permanent Special Use Authorizations -**

*Winter and/or summer temporary special use road* - Roads are built to a low standard and are not intended to become part of the National Forest System road inventory. Temporary road authorizations are generally for 5 years and are obliterated after use by the permit holder. These roads are used to access state or county timber harvest and timing of road use is dictated by soil conditions. Activities associated with these permits are expected to be completed by 2021.

*New permanent (long-term) special use road or transmission line rights of way* - These roads provide access to private land and are generally built to low standards, however crushed gravel may occasionally be added to the surface of the roadway to harden the roadway surface. These roads are generally considered all season roads with permits expiring after 5-10 years, however permits are generally re-issued for long-term road use. Timing of road construction is dictated by soil conditions. Projects associated with these permits will generally be completed within the first year that the permit is issued, however permit holders have until 2021 to complete the work. Effects from new construction of an overhead transmission line are considered under this category because permanent tree removal will be taking place and the project will likely have similar impacts to a new road right-of-way.

*New building construction* – Approximately 0.02 acres of clearing will occur for a building site. The majority of building construction will occur on an old building site that does not contain suitable NLEB habitat; however, a limited amount of tree cutting may be necessary.

- 3. Hardrock Mineral Exploration** - Up to 29 permits may be issued between 2012 and 2032. Each pad requires a clear area of 50 feet X 100 feet and will make use of existing or temporary 12 foot wide access roads. Temporary roads are expected to remain open for 15 years. Pads and newly constructed roads would be left to revegetate when prospecting is completed. Tree removal will occur on up to 401 acres of Forest land for mineral exploration activities.

Projects that are likely to adversely affect the NLEB are projects that may result in take of the species because the removal trees may occur during the summer roost period (April 1 - September 30) or during the pup season (June 1 - July 31).

Proposed Action	Acres of Tree Removal	
	Direct/Indirect Effects	Cumulative Effects
Trail Development (Perm)	6.9	0
Temp Special Use Road	13.8	1315
Perm Special Use Road*	4.8	0
Mineral Exploration	401	0
<b>Total</b>	<b>426.5</b>	<b>1315</b>

**Table 1.** Acreage of proposed direct/indirect and cumulative tree removal. \* includes 0.02 acres of potential clearing from construction of a new building site.

In addition to the Interim 4 (d) rule conservation measures, the Forest incorporates additional measures in its Project Design Criteria to conserve northern long-eared bat summer roosting habitat as follows:

1. Special Use Permit Stipulations -
  - a. The holder shall not cut timber except as authorized by construction stipulation or maintenance agreement;
  - b. The holder shall comply with State and Federal laws, Executive Orders, and Federal rules and regulations, and shall comply with all State standards for public health and safety, environmental protection, and siting construction, operation, maintenance of rights-of-way for similar purpose if those standards are more stringent than Federal standards;
  - c. All construction or reconstruction of the road shall be in accordance with plans, specification, and written stipulations approved by the Forest Service prior to beginning of construction or reconstruction; and

- d. For temporary special use roads - The road will be closed after operations are complete.
2. Federal Hardrock Minerals Prospecting Permit Stipulations -
  - a. Best management practices include:
    - i. Surface disturbance from drilling shall be minimized to the extent possible;
    - ii. In the construction of new access roads and drill pads, all effort shall be made to avoid cutting timber;
    - iii. Removal of cutting of trees or vegetation shall be kept to a minimum;
    - iv. Any pile trees cut or pushed over along with slash shall be no higher than 3 feet high;
    - v. Avoid felling trees into non-forested wetlands;
    - vi. No trees over 5 inches in diameter at breast height (DBH) of 4 feet 5 inches may be pushed over, they must be cut; and
    - vii. The top 12 inches of topsoil shall be stripped and stockpiled separately from the rest of the excavated material.
  - b. All roads, trails, drill pads, and other disturbance features shall be staked or flagged on the ground for agency review during the Operating plan approval phase and prior to implementation of the operating plan; and
  - c. Because all listed plant locations or nest and/or den sites are not known, survey needs shall be determined by a Forest biologist, using approved protocols in suitable habitat, to determine occupancy in the areas where exploration activities are planned.

In addition, Minnesota Forest Resources Council guidance is incorporated by state and county agencies while conducting timber harvest operations that will become accessible through these Special Use Permits and will consist of:

- a. On clearcut sites, in general leave 6-12 live trees/acre, trees can be retained as individual trees or clumps; and
- b. Leave all snags possible standing in harvest area.

### **Projects/Actions that Are Not Likely to Adversely Affect the NLEB**

All individual projects included in the BA involve some type of tree removal or will provide access to areas for timber harvest to occur. Some activities will take place only when the NLEB is absent from summer roosting habitat. The following activities, while not explicitly proposed by the Forest, have the potential to occur on state/county lands as the result of road construction and approved access. These activities may affect, but are not likely to adversely affect the NLEB because they will take place when bats are absent from summer roosting habitat; will not affect any known or suspected staging or swarming areas; and, will not alter habitat to the extent that indirect adverse effects are likely to occur to NLEBs when they return to the affected area after hibernation:

- Uneven-aged timber harvest;

- Intermediate harvest treatments (thinning);
- Construction of temporary roads;
- Slash disposal; and
- Road decommissioning

One additional activity (even-aged timber harvest), however, may occur outside of the summer maternity roost season and is likely to have substantial effects to habitat for the NLEB that they are likely to result in adverse effects to the species. As a result of this possibility and for the purposes of this BO, the Service will assume that all timber harvest occurring on state/county lands are even-aged timber harvests. Effects from those treatments are discussed in the rest of this BO.

Two actions that the Forest has discretion over are not likely to adversely affect the NLEB and include brushing of existing Right of Way (ROW) and road decommissioning. Approximately 6 acres (1.9 miles) of roads will involve brushing (1.9 miles of existing road x 5,280 feet/mile = 10,032 ft. x 30 ft. width /300,960 ft<sup>2</sup> per acre = 6 acres), but no tree removal of greater than 3 DBH is anticipated. The potential effects from brushing may include temporary disturbance or displacement due to human presence in the vicinity of roost trees. This activity is not anticipated to result in the loss of suitable roost tree habitat and based on the abundance of available habitat across the Project area, the probability of a NLEB being disturbed by brushing is discountable. Road decommissioning may also temporarily disturb or displace NLEB due to human presence and activity, but none of these activities will result in removal of trees or other permanent disturbance to NLEB. Approximately 22 acres (6.2 miles) of roads will be decommissioned (6.2 miles of existing road x 5,280 feet/mile = 32,736 ft. x 30 ft. width /982,080 ft<sup>2</sup> per acre = 22 acres), but no tree removal is expected with decommissioning. The amount of acres impacted by temporary roads, helipads and barge landing resulting from minerals prospecting may occur on approximately 321 acres and are expected to be decommissioned after 15 years. As a result of the above explanations, the Service concurs that these activities are not likely to adversely affect the NLEB.

No further consultation or coordination under the ESA is required for the above-listed projects that will have no effect or are not likely to adversely affect the NLEB. Should project plans change, or if additional information on listed and proposed species become available, this determination may be reconsidered.

### **Projects/Actions that Are Likely to Adversely Affect the NLEB**

Any tree removal activity that takes place in summer roosting habitat during the summer roosting period (April 1 to September 30) may affect and is likely to adversely affect the NLEB. The types of tree clearing activities that are proposed are discussed in more detail below. In addition, even-aged timber harvest is likely to adversely affect the NLEB when they affect suitable summer roosting habitat even when they occur outside of the summer roosting period.

The interim 4(d) rule (80 FR 2371) states that in areas affected by WNS, all incidental take prohibitions apply except that take attributable to forest management practices, maintenance and

limited expansion of transportation and utility rights-of-way, removal of trees and brush to maintain prairie habitat, and limited tree removal projects shall be excepted from the take prohibition, provided these activities protect known maternity roosts and hibernacula. Twenty-five of the proposed actions that are listed under the interim 4(d) rule and include forest management, limited expansion of transportation and utility rights-of-way, and limited tree removal. Sixteen activities (GUN 1072-71, GUN 1072-72, GUN 1072-74a/GUN 1072-74b, GUN 1072-75, GUN 1072-76, KAW 1078-06, KAW 1078-07, LAC 1076-53, LAC 1076-54, LAC 1601-55, LAU 1002-49, LAU 1002-56, LAU 1071-30, LAU 1071-49, TOF 1077-63, TOF 1077-64) actions are included under the definition of forest management used for the rule, which states:

“(F)orestry management is the practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization and conservation of forests to meet specific goals and objectives (Society of American Foresters (SAF)(a), [http://dictionaryofforestry.org/dict/term/forest\\_management](http://dictionaryofforestry.org/dict/term/forest_management)). Forestry management includes the suite of activities used to maintain and manage forest ecosystems, including, but not limited to: timber harvest and other silvicultural treatments, prescribed burning, invasive species control, wildlife openings, and temporary roads.”

Two activities (Mixed-use Motorized trail and Zabokrsky Access) actions are included under the definition of limited expansion of transportation and utility rights-of-way used for the rule, which states:

“Expansion of a corridor or ROW by up to 100 feet (30 m) from the edge of an existing cleared corridor or ROW, carried out in accordance with the previously described conservation measures. General ROW routine maintenance is designed to limit vegetation growth, within an existing footprint, so that operations can continue smoothly. These activities may include tree trimming or removal, mowing, and herbicide spraying.”

Seven activities (Lake County Power, Chik-Wauk, Makela Access, Chittendon Access, Arrowhead Trail, Rokeh Access and Folsom-New Alignment/Folsom-Decommission) actions are included under the definition of “minimal” tree removal used for the rule, which states:

Minimal tree removal is defined as one acre or less. Furthermore, the limitation of the impact to an acre or less may be interpreted as follows: One acre of contiguous habitat or one acre in total within a larger tract, whether that larger tract is entirely forested or a mixture of forested and non-forested cover types.

Therefore, these proposed activities in the Forest that may adversely affect NLEB are within the scope of activities covered by the interim 4(d) rule. Moreover, any incidental take that results from their implementation is exempt from the section 9 prohibitions as long as they include the interim 4(d) rule’s conservation measures.

The remaining two activities are not classified under the interim 4(d) rule and include construction of a new South Fowl Snowmobile Trail and a permit to allow for Federal Hardrock Minerals Prospecting. The Service concurs that these activities are likely to adversely affect the NLEB and the remainder of the BO will address these activities.

### **Conservation Measures**

Conservation measures are those actions taken to benefit or promote the recovery of the species. These actions taken by the federal agency or the applicant that serve to minimize or compensate for project effects on the species under review and are included as an integral portion of the proposed action.

To be in compliance with the interim 4(d) rule for NLEB, the USFS has committed to the following conservation measures as part of the project description:

- 1) All proposed activities will occur more than 0.25 miles (0.4 km) from known, occupied hibernacula.
- 2) The USFS will avoid cutting or destroying known, occupied roost trees during the pup season (June 1–July 31).
- 3) The USFS will avoid clearcuts (and similar harvest methods, *e.g.*, seed tree, shelterwood, and coppice) within 0.25 (0.4 km) mile of known, occupied roost trees during the pup season (June 1–July 31).

As states above, no known hibernacula or occupied roost trees occur within 0.25 miles of the proposed projects. Therefore, these measures would only be implemented if either type of feature is identified within 0.25 miles of the individual action area before any of the proposed actions are completed. Although hibernacula may be unlikely to be found, the discovery of occupied roost trees may occur if radio telemetry studies are conducted in the vicinity of the Superior National Forest.

In addition to the conservation measures addressed in the 4(d) rule, the Forest has identified project design criteria to help conserve NLEB habitat for activities in the BA and will be conveyed to the permit holder. For special use permits, the holder shall not cut timber except as authorized by construction stipulation or maintenance agreement and temporary special use roads will be closed after operations are complete, as specified in the BA. For hardrock minerals prospecting permits, surface disturbance from drilling shall be minimized to the extent possible, all efforts shall be made to avoid cutting of timber when constructing new access roads and drill pad sites, and removal or cutting of trees and vegetation shall be kept to a minimum and will require a timber sale permit prior to any tree cutting.

## STATUS OF THE SPECIES

Refer to the final rule (80 FR 17974) for the best available information on NLEB life history and biology, threats, distribution and overall status. The following is summary from that rule.

### Life History and Biology

The NLEB is a temperate, insectivorous, migratory bat that hibernates in mines and caves in the winter and spends summers in wooded areas. The key stages in its annual cycle are: hibernation, spring staging and migration, pregnancy, lactation, volancy/weaning, fall migration and swarming. NLEB generally hibernate between mid-fall through mid-spring each year. Spring migration period likely runs from mid-March to mid-May each year, with timing varying depending on the portion of the range. Females depart shortly after emerging from hibernation and are pregnant when they reach their summer area. Parturition (birth) likely occurs in late May or early June (Caire et al. 1979, p. 406; Easterla 1968, p. 770; Whitaker and Mumford 2009, p. 213), but may occur as late as July (Whitaker and Mumford 2009, p. 213). Females give birth to a single offspring. Lactation lasts 3 to 5 weeks and pups are weaned shortly after becoming volant (able to fly). Pups become volant typically between early July and early August. Fall migration likely occurs between mid-August and mid-October.

### Summer habitat and ecology

Suitable summer habitat<sup>1</sup> for NLEB consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts, as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure.

Many species of bats, including the NLEB, consistently avoid foraging in or crossing large open areas, choosing instead to use tree-lined pathways or small openings (Patriquin and Barclay 2003, Yates and Muzika 2006). Further, wing morphology of the species suggests that they are adapted to moving in cluttered habitats. Thus, isolated patches of forest may not be suitable for foraging or roosting unless the patches are connected by a wooded corridor.

Upon emergence from the hibernacula in the spring, females seek suitable habitat for maternity colonies (typically consisting of females and young). NLEB actively form colonies in the summer (Foster and Kurta 1999) and exhibit fission-fusion behavior (Garroway and Broders 2007), where members frequently coalesce to form a group (fusion), but composition of the group is in flux, with individuals frequently departing to be solitary or to form smaller groups (fission) before returning to the main unit (Barclay and Kurta 2007). As part of this behavior,

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<sup>1</sup> See the Service's current summer survey guidance for our latest definitions of suitable habitat – <http://www.fws.gov/midwest/Endangered/mammals/inba/surveys/pdf/2015IndianaBatSummerSurveyGuidelines01April2015.pdf>. Note that although the title of this document mentions only Indiana bat, it does contain a definition of potential summer habitat for the northern long-eared bat.

northern long-eared bats switch tree roosts often (Sasse and Pekins 1996), typically every 2 to 3 days (Foster and Kurta 1999; Owen et al. 2002; Carter and Feldhamer 2005; Timpone et al. 2010). NLEB maternity colonies range widely in size, although a maximum of 30-60 individuals may be most common early in the season, with the colony size decreasing post-lactation of young (Service 2014). NLEB show some degree of interannual fidelity to single roost trees and/or maternity areas. Male NLEB are routinely found with females and young in maternity colonies. NLEB use networks of roost trees often centered around one or more central-node roost trees (Johnson et al. 2012). NLEB roost networks also include multiple alternate roost trees and male and non-reproductive female NLEB may also roost in cooler places, like caves and mines (Barbour and Davis 1969, Amelon and Burhans 2006).

NLEB roost in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags (typically  $\geq 3$  inches DBH). NLEB are known to use a wide variety of roost types, using tree species based on presence of cavities or crevices or presence of peeling bark. NLEB have also been occasionally found roosting in structures like barns and sheds (particularly when suitable roost trees are unavailable).

### Migration

Males and non-reproductive females may summer near hibernacula, or migrate to summer habitat some distance from their hibernaculum. NLEB is not considered to be a long distance migrant (typically 40-50 miles). Migration is an energetically demanding behavior for the NLEB, particularly in the spring when their fat reserves and food supplies are low and females are pregnant.

### Winter habitat and ecology

Suitable winter habitat (hibernacula) includes underground caves and cave-like structures (e.g. abandoned or active mines, railroad tunnels). There may be other landscape features being used by NLEB during the winter that have yet to be documented. Generally, NLEB hibernate from October to April depending on local climate (November-December to March in southern areas and as late as mid-May in some northern areas).

Hibernacula for NLEB typically have significant cracks and crevices for roosting; relatively constant, cool temperatures (0-9 degrees Celsius) and with high humidity and minimal air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

NLEB tend to roost singly or in small groups (Service 2014), with hibernating population sizes ranging from a just few individuals to around 1,000 (Service unpublished data). NLEB display more winter activity than other cave species, with individuals often moving between hibernacula throughout the winter (Griffin 1940, Whitaker and Rissler 1992, Caceres and Barclay 2000).

NLEB have shown a high degree of philopatry to the hibernacula used, returning to the same hibernacula annually.

### Spring Staging and Fall Swarming habitat and ecology

Upon arrival at hibernacula in mid-August to mid-November, NLEB “swarm,” a behavior in which large numbers of bats fly in and out of cave entrances from dusk to dawn, while relatively few roost in caves during the day. Swarming continues for several weeks and mating occurs during the latter part of the period. After mating, females enter directly into hibernation but not necessarily at the same hibernaculum as they had been mating at. A majority of bats of both sexes hibernate by the end of November (by mid-October in northern areas).

After hibernation ends in late March or early April (as late as May in some northern areas), most NLEB migrate to summer roosts. Females emerge from hibernation prior to males. Reproductively active females store sperm from autumn copulations through winter. Ovulation takes place after the bats emerge from hibernation in spring. The period after hibernation and just before spring migration is typically referred to as “staging,” a time when bats forage and a limited amount of mating occurs. This period can be as short as a day for an individual, but not all bats emerge on the same day.

In general, NLEB use roosts in the spring and fall similar to those selected during the summer. Suitable spring staging/fall swarming habitat consists of the variety of forested/wooded habitats where they roost, forage, and travel, which is most typically within 5 miles of a hibernaculum. This includes forested patches as well as linear features such as fencerows, riparian forests and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree and are less than 1,000 feet from the next nearest suitable roost tree, woodlot, or wooded fencerow.

### **Threats**

No other threat is as severe and immediate for the NLEB as the disease white-nose syndrome (WNS). It is unlikely that NLEB populations would be declining so dramatically without the impact of WNS. Since the disease was first observed in New York in 2007 (later biologists found evidence from 2006 photographs), WNS has spread rapidly in bat populations from the Northeast to the Midwest and the Southeast. Population numbers of NLEB have declined by 99 percent in the Northeast, which along with Canada, has been considered the core of the species’ range. Although there is uncertainty about how quickly WNS will spread through the remaining portions of these species’ ranges, it is expected to spread throughout their entire ranges. In general, the Service believes that WNS has significantly reduced the redundancy and resiliency of the NLEB.

Although significant NLEB population declines have only been documented due to the spread of WNS, other sources of mortality could further diminish the species’ ability to persist as it experiences ongoing dramatic declines. Specifically, declines due to WNS have significantly

reduced the number and size of NLEB populations in some areas of its range. This has reduced these populations to the extent that they may be increasingly vulnerable to other stressors that they may have previously had the ability to withstand. These impacts could potentially be seen on two levels. First, individual NLEB sickened or struggling with infection by WNS may be less able to survive other stressors. Second, NLEB populations impacted by WNS, with smaller numbers and reduced fitness among individuals, may be less able to recover making them more prone to extirpation. The status and potential for these impacts will vary across the range of the species.

Bats affected but not killed by WNS during hibernation may be weakened by the effects of the disease and may have extremely reduced fat reserves and damaged wing membranes. These effects may reduce their capability to fly or to survive long-distance migrations to summer roosting or maternity areas.

In areas where WNS is present, there are additional energetic demands for northern long-eared bats. For example, WNS-affected bats have less fat reserves than non-WNS-affected bats when they emerge from hibernation (Reeder et al. 2012; Warnecke et al. 2012) and have wing damage (Meteyer et al. 2009; Reichard and Kunz 2009) that makes migration and foraging more challenging. Females that survive the migration to their summer habitat must partition energy resources between foraging, keeping warm, successful pregnancy and pup-rearing, and healing and may experience reduced reproductive success. In addition, with wing damage, there may be an increased chance of WNS-affected bats being killed or harmed as a result of proposed action. Again, this is particularly likely if timber harvest or burns are conducted early in the spring (April – May) when bats have just returned, have damaged wings, and are exposed to colder temperatures when torpor is used more frequently.

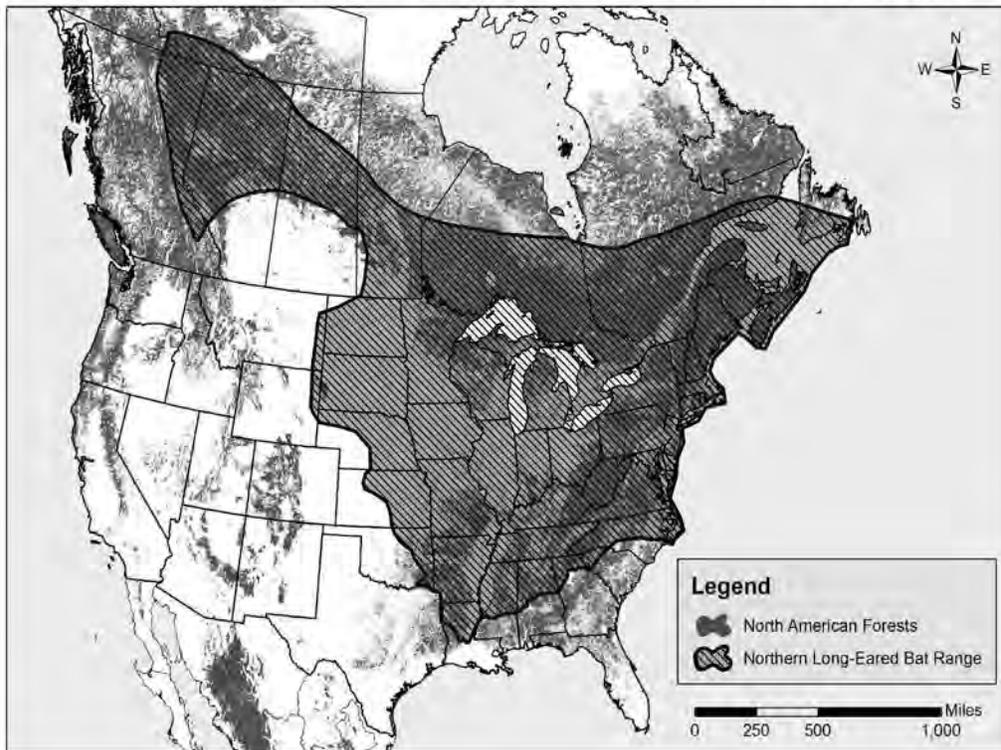
Over the long-term, sustainable forestry benefits NLEB by maintaining suitable habitat across a mosaic of forest treatments. However, forest practices can have a variety of impacts on the NLEB depending on the quality, amount, and location of the lost habitat, and the time of year of clearing. Depending on their characteristics and location, forested areas can function as summer maternity habitat, staging and swarming habitat, migration or foraging habitat, or sometimes, combinations of more than one habitat type. Impacts from tree removal to individuals or colonies would be expected to range from indirect impact (e.g., minor amounts of forest removal in areas outside NLEB summer home ranges or away from hibernacula) to minor (e.g., largely forested areas, areas with robust NLEB populations) to significant (e.g., removal of a large percentage of summer home range, highly fragmented landscapes, areas with WNS impacts).

Lastly, there is growing concern that bats, including the NLEB (and other bat species) may be threatened by the recent surge in construction and operation of wind turbines across the species' range. Mortality of NLEB has been documented at multiple operating wind turbines/farms. The Service is now working with wind farm operators to avoid and minimize incidental take of bats and assess the magnitude of the threat.

## Rangewide Status

The NLEB ranges across much of the eastern and north central United States, and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia (Nagorsen and Brigham 1993; Caceres and Pybus 1997; Environment Yukon 2011)(Figure X). In the United States, the species' range reaches from Maine west to Montana, south to eastern Kansas, eastern Oklahoma, Arkansas, and east through the Gulf States to the Atlantic Coast (Whitaker and Hamilton 1998; Caceres and Barclay 2000; Amelon and Burhans 2006). The species' range includes the following 37 States (plus the District of Columbia): Alabama, Arkansas, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming. Historically, the species has been most frequently observed in the northeastern United States and in Canadian Provinces, Quebec and Ontario, with sightings increasing during swarming and hibernation (Caceres and Barclay 2000). However, throughout the majority of the species' range it is patchily distributed, and historically was less common in the southern and western portions of the range than in the northern portion of the range (Amelon and Burhans 2006).

### Northern Long-Eared Bat (*Myotis septentrionalis*) Range



*Figure 1. Northern long-eared bat range.*

Although they are typically found in low numbers in inconspicuous roosts, most records of NLEB are from winter hibernacula surveys (Caceres and Pybus 1997). More than 780 hibernacula have been identified throughout the species' range in the United States, although many hibernacula contain only a few (1 to 3) individuals (Whitaker and Hamilton 1998). Known hibernacula (sites with one or more winter records of northern long-eared bats) include: Alabama (2), Arkansas (41), Connecticut (8), Delaware (2), Georgia (3), Illinois (21), Indiana (25), Kentucky (119), Maine (3), Maryland (8), Massachusetts (7), Michigan (103), Minnesota (11), Missouri (more than 269), Nebraska (2), New Hampshire (11), New Jersey (7), New York (90), North Carolina (22), Oklahoma (9), Ohio (7), Pennsylvania (112), South Carolina (2), South Dakota (21), Tennessee (58), Vermont (16), Virginia (8), West Virginia (104), and Wisconsin (67). NLEB are documented in hibernacula in 29 of the 37 States in the species' range. Other States within the species' range have no known hibernacula (due to no suitable hibernacula present, lack of survey effort, or existence of unknown retreats).

The current range and distribution of NLEB must be described and understood within the context of the impacts of WNS. Prior to the onset of WNS, the best available information on NLEB came primarily from surveys (primarily focused on Indiana bat or other bat species) and some targeted research projects. In these efforts, NLEB was very frequently encountered and was considered the most common myotid bat in many areas. Overall, the species was considered to be widespread and abundant throughout its historic range (Caceres and Barclay 2000).

WNS has been particularly devastating for NLEB in the northeast, where the species was believed to be the most abundant. There are data supporting substantial declines in NLEB populations in portions of the Midwest due to WNS. In addition, WNS has been documented at more than 100 NLEB hibernacula in the southeast, with apparent population declines at most sites. WNS has not been found in any of the western states to date and the species is considered rarer in the western extremes of its range. We expect further declines as the disease continues to spread across the species' range.

### **Status of the Northern Long-eared Bat in Minnesota**

Prior to 2013, there was little information on NLEB summer populations in the state. A pilot study initiated by the SNF in 2013 tracked northern long-eared bats to identify roost sites and has begun to define habitat characteristics (Grandmaison et al. 2013, Catton 2014). Though preliminary, these data confirm that female northern long-eared bats utilize cracks and crevices in live and dead aspen (*Populus tremuloides*) and white pine (*Pinus strobus*). These trees were large (diameter at breast height [d.b.h.] > 11 in.) with heights ranging from 23.5 – 70.6 feet and were located on predominantly east facing aspects although slopes were generally gradual across the survey area. Canopy closure in the surrounding stands tended to be high (62 – 98%) though the roost trees had some level of exposure to sunlight during the day. Overall stand tree composition was variable in nature (Catton 2014).

In 2014, passive acoustic surveys conducted at a new proposed mining area in central St. Louis County detected the presence of NLEB at each of 13 sites sampled. Calls that were assigned to NLEB accounted for approximately 14 percent of all recorded bat calls (Smith et al. 2014).

Mist-net surveys in 2014 at 7 sites on Camp Ripley Training Center, Morrison County, resulted in capture of 4 NLEB (5 percent of total captures); mist-net surveys at 5 sites on the Superior National Forest, Lake and St. Louis Counties, resulted in the capture of 24 NLEBs (Fig. 2; 55 percent of total captures). Seventeen Northern long-eared bat roost trees were located in 2014 on the Superior National Forest and live aspen were predominant of the trees used ranging in size from 9-18 inches d.b.h. (Catton 2014). Acoustic and mist-net data were collected by a pipeline project proponent in 2014, which surveyed an approximately 125-foot wide and 300-mile long (483-km) corridor through the northern third of the state. Positive detections were recorded in Hubbard, Cass, Crow Wing, Aitkin, and Carlton counties, and NLEBs were the most common species captured by mist-net (Merjent unpublished data). Mist-net surveys were conducted the previous year (2013) on the Kawishiwi District of the Superior National Forest, and resulted in capture of 13 NLEBs (38 percent of total captures) over 9 nights of netting at 8 sites (Grandmaison et al. 2013).

The NLEB is known from 15 hibernacula in Minnesota; however, the status of most is unknown. The largest known hibernaculum in Minnesota is the Soudan Mine in St. Louis County; an estimated 3,000 northern long-eared bats are thought to hibernate within the mine. WNS has not been detected in Minnesota; however, the fungus that causes WNS was first detected in 2011–2012. Currently, only Soudan Mine and Mystery Cave in Minnesota are known to harbor the fungus that causes WNS and to our knowledge, the fungus has not actually caused WNS in bats within the state.

### **Critical Habitat**

Critical habitat has not been proposed for the NLEB.

### **Conservation Needs of the Species**

The species' conservation needs define what is needed in terms of reproduction, numbers, and distribution to ensure the species is no longer in danger of extinction. The conservation needs should be defined in the species' recovery outline or plan. Since there is no recovery plan or recovery outline available at this time, we will outline the conservation needs based on our current understanding of the species.

We find that the primary conservation need of the NLEB is to reduce the threat of WNS. This includes minimizing mortality in WNS-affected areas, and slowing the rate of spread into currently unaffected areas. In addition, NLEB that continue to exist within WNS-affected areas need to be able to continue to survive and reproduce in order to stabilize and/or increase the populations. This can be done by reducing the other threats to the species, as listed above.

*Figure 2. Locations of northern long-eared bat (NLEB) mist-net captures and roost tree locations based on surveys conducted in 2013-2014. (Note: These data are not based on an exhaustive inventory of the area shown the lack of data for any geographic area shall not be construed to mean that no NLEB are present.)*

Therefore, efforts to protect hibernacula from disturbances need to continue. This should include restricting human access to hibernacula particularly during the hibernation period, constructing and maintaining appropriately designed gates, where appropriate, and restoring microhabitat conditions in hibernacula that have been altered. Efforts should also be made to protect and restore (in some cases) adequate fall swarming habitat around hibernacula. Known maternity habitat should be maintained, and the removal of known roost trees, particularly when pregnant females and/or young are present should be reduced. Research to identify important hibernacula and summer areas and to delineate the migratory relationship between summering and wintering populations should also be pursued.

## **ENVIRONMENTAL BASELINE**

The Environmental Baseline analyzes the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and the ecosystem within the action area.

## **Action Area**

Action area, as defined by the ESA's implementing regulations (50 CFR 402.02), is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (our emphasis). Action is defined in the regulations as "...all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to: (a) actions intended to conserve listed species or their habitat; (b) the promulgation of regulations; (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air.

For the Projects included in BA, the area where "land, water, or air" that is likely to be affected is land administered by the USFS where recreation, special use access, timber harvest, minerals exploration, and associated actions authorized by the Forest would occur. The activities considered in this biological opinion are dispersed throughout the Superior National Forest; therefore, we consider the lands within the Forest boundary outside of the Boundary Waters Canoe Area Wilderness (BWCAW) as the action area. The Forest boundary in this context encompasses over 2.1 million acres (includes Federal, state, county and other ownerships) - of which over 1,191,000 acres are forested lands managed specifically by the Forest.

## **Status of the Species in the Action Area**

The USFS initiated mist-netting, radio-telemetry, habitat characterization, and acoustic survey efforts in 2013 and while the sample size is still small, available data are providing insights into bat presence and habitat use. Acoustic monitoring data will be used to identify baseline bat activity levels and observe how those levels may change in response to WNS, but completed data analyses are not expected summer of 2015. In 2013, 34 bats were captured at eight locations, of which 13 were NLEB. Both reproductive adults and non-reproductive juveniles were captured and five NLEB were equipped with radio-transmitters, which resulted in detections of multiple roost sites. Three maternity roosts were identified in live aspen and four additional roosts were in dead aspen and white pine.

Other results of mist-net surveys conducted in 2013 and 2014 in Minnesota have found a range of relative abundance for NLEB. Based on the frequency and proximity to Forest of positive NLEB detections in Minnesota and the prevalence of suitable habitat for the species on the Forest, it is reasonable to assume that the species may be widespread in the action area. Because survey data analyses not yet complete, we cannot estimate roost tree density or the proportion of the Forest that is inhabited by NLEB within a useful level of precision. The USFS is also working with the Minnesota Department of Natural Resources and the Service to increase our collective knowledge of NLEB distribution and habitat use in northern Minnesota.

As stated above, there are a limited number of known roost trees within the Forest boundary, although none are within 1.5 miles of any of the proposed 27 SUP individual project areas. If NLEB are captured and radio-tracked on or near the Forest, there is potential for occupied roost trees to be found in close proximity to any of these proposed actions.

## Habitat Conditions in the Action Area

Overall, the Forest provides an abundance of well-distributed, suitable summer habitat (see BA Appendices for maps that illustrate habitat and distribution of proposed actions). Approximately 1.7 million acres in the action area outside of BWCAW are considered potential NLEB summer habitat, which is defined as all forested areas greater than or equal to 9 years old with trees greater than 3 inches DBH. Of this, approximately 1,229,905 acres are on National Forest Systems lands and approximately 518,819 acres are on state and county lands. (Note: land ownership within the Forest boundary is intermingled; therefore, the BA also provides acres under state and county ownership in their analysis). Summer habitat that is currently in a suitable condition for NLEB use encompasses approximately 1,191,584 (97 percent) and 475,698 (92 percent) under Federal and state/county land ownership, respectively, (see BA Table 5, p. 13). Currently unsuitable habitat, defined as forested habitats less than 9 years old and non-forested areas, covers approximately 37,921 acres (3 percent) on the Forest outside of BWCAW and 43,934 acres (8 percent) on state/county lands.

A pilot study initiated by the USFS in 2013 confirmed that northern long-eared bats utilize cracks and crevices in live and dead aspen (*Populus tremuloides*) and white pine (*Pinus strobus*) (Grandmaison et al. 2013). Seven roost trees were located in 2013 and 18 in 2014 on the Forest. Live aspen were the predominant of the trees used ranging in size from 9-18 inches DBH (Catton 2014). Data from this study should be considered preliminary as the study continues, but thus far has confirmed the following: roost trees were large (DBH > 11 in.) with heights ranging from 23.5 – 70.6 feet; canopy closure in the stands around roost trees was high (62 – 98%), although roost trees had some level of exposure to sunlight during the day. In 2014, lactating females were found between mid-June and early July (Catton 2014).

There are four known or suspected NLEB hibernacula within 5 miles of the Forest boundary. Section 30 Mine is located on private land just outside of Ely, Minnesota and NLEBs were documented wintering in this site in the 1990's. The mine is not monitored on a regular basis. Sudan Mine, the largest known hibernaculum in the state, is located approximately 5 miles outside the Forest boundary. A third known hibernaculum is located at Tettegouche State Park and is located approximately 4 miles outside of the Forest boundary - about 9 miles from the nearest USFS lands - and this site is also not regularly monitored but was known to house wintering NLEBs in 1990 and 2003. The fourth site is the Jack Lake mine, located within the Boundary Waters Canoe Areas Wilderness on the Tofte Ranger District. This is a suspected hibernaculum and has never been monitored in the winter for bats: however during a USFS site visit in September 2014, bats were found using it.

The Forest also contains a small amount of swarming and staging area. A total of 15,150 acres of National Forest lands meet the criteria for swarming or staging areas (1.3% of the Superior National Forest). Fall swarming dates at Soudan mine, one of the hibernacula near the Forest, have been documented as early August to mid-October and spring staging activity has been documented from late April to mid-June (Nordquist 2015).

## **Conservation Needs of the Species in the Action Area**

The conservation needs of the species in the action area are similar to the needs rangewide. The Superior National Forest provides habitat for swarming, hibernating, migrating, and summering NLEB. Therefore, within the action area the conservation needs include: 1) providing suitable habitat conditions for NLEB swarming, foraging, and roosting; 2) reducing the removal of roost trees; 3) searching for previously unidentified areas of maternity and hibernation activity; and 4) conducting research to understand the migration patterns of NLEB that use the area during the summer or winter.

## **EFFECTS OF THE ACTION**

This BO evaluates the anticipated effects of 27 ongoing projects on the Superior National Forest. These projects will affect a total of 1,741 acres of potential NLEB habitat within the Forest boundary, including 1,314 acres from timber harvest on state and county lands that have become accessible from the SUP access and new road construction. The remaining 427 acres occur on Forest land and affected by construction from roads, trails, minerals prospecting and power line corridors and building sites. Potential effects to the NLEB include direct and indirect effects. Direct effects occur when bats are present while the activities are being conducted; indirect effects occur later in time. Effects will vary based on the type of the proposed activity.

Our analysis of effects for NLEB entails: (1) evaluating individual NLEB exposure to action-related stressors and the bats' likely responses; (2) integrating those individual effects (exposure risk and subsequent response) to discern the consequences to the populations to which those individuals belong; and (3) determining the consequences of any population-level effects to the species rangewide. If, we find that the actions are unlikely to affect the rangewide numbers, reproduction and distribution of the species in a way that can be measured or described, we conclude that the agency's actions are not likely to jeopardize the continued existence of the species.

### **Direct and Indirect Effects**

#### Effects to Hibernating Bats at or Near Hibernacula

As described in more detail in the section, **Habitat Conditions in the Action Area**, above, there are four known or suspected NLEB hibernacula within 5 miles of the Forest boundary. The two closest hibernacula are Soudan Mine, which is over 13 miles from the nearest project area and the Section 30 Mine located over 2.5 miles from the nearest project area. NLEBs present at these hibernacula, however, are not likely to be exposed to the direct or indirect effects of the proposed actions.

There will be a direct impact resulting from the loss of 0.2 acres of potential swarming habitat (within 5 miles of a known, occupied hibernaculum) for the construction of a 0.15 mile permanent road to access private property. This private access road, however, will occur along a narrow linear route in an area where ample suitable habitat would remain. There are a total of 15,150 acres of Forest lands that meet the criteria for swarming/staging areas. As a result, we

conclude that the overall habitat suitability or availability for NLEB swarming habitat within the project area would be minimally affected by proposed action.

Effects to Bats during Spring/Summer and/or to Spring/Summer Habitat

*Tree Removal Associated with Road Construction, Timber Harvest and Other Activities*

1,741 acres total

1,173 acres during winter (no direct effects)  
1,164 acres by temporary habitat removal  
9 acres by permanent habitat removal

568 acres during active season  
560 acres by temporary habitat removal  
8 acres by permanent habitat removal

Tree clearing will occur within suitable summer habitat for the NLEB on a total of 1,741 acres as a result of temporary and permanent ROW construction, new building construction, prospecting drill site placement, and mechanical site preparation and timber harvest on state and county lands. Mechanical site preparation and timber harvest is included in this estimate because these actions are interdependent and interrelated to the creation of temporary access roads to state and county lands.

Most of these activities, 67 percent (or approximately 1,173 acres), will occur in the winter when bats are not anticipated to be present; however, 33 percent (or approximately 568 acres) will occur during the period when NLEB may be present. Within the areas affected by these activities, NLEBs are likely to be harmed, harassed, or killed as a result of tree removal during the spring to early fall roosting period, April 1 to September 30.

Death/Injury

Risk of death or injury of individual NLEB from tree removal varies depending on the timing of activities, their location, type of harvest, and extent of the area affected.

The timing of tree removal greatly influences the likelihood of exposure and the extent of impacts on individual bats and their populations. Female NLEB typically roost colonially, with their largest population counts occurring in the spring or early summer, presumably as one way to reduce thermal costs for individual bats (Foster and Kurta 1999). Although bats may flee their roosts during tree removal, removal of occupied roosts during the active season while bats are present (spring through fall) is likely to cause injury or mortality to some roosting bats. Bats are likely to be injured or killed as a result of tree felling in the spring when bats often use torpor (temporary unresponsive state) to survive periods of cool weather and low prey availability. Bats are also likely to be killed or injured during early to mid-summer (approximately June-July) when flightless pups or inexperienced flying juveniles are present. Removal of trees outside

these periods is less likely to result in direct injury or mortality when the majority of bats can fly and are more dispersed.

Lastly, the likelihood and extent of impacts are influenced by the type of the timber harvest or tree removal relative to the amount of remaining suitable roosting and foraging habitat from which affected bats may select. NLEBs use multiple roosts throughout the season. Therefore, only a certain number of roosts are anticipated to be occupied in a single day or year. Larger areas of tree removal have greater risk than when smaller areas are affected. Similarly, clearcuts have greater risk than selective harvest treatments (individual or group) because more trees will be removed in the treatment area.

When considering interdependent and interrelated actions, the BA estimates that 1,173 acres (67 percent) of the total area proposed for activities involving tree clearing (1,741 acres) will occur outside of the summer roosting period, which would reduce the direct effects of summer clearing. In areas affected by even-aged timber harvest and mechanical site preparation, however, the NLEB could be adversely affected as a result of the significant alteration of habitat. The method of timber harvest occurring on state and county lands as a result of new access being provided by the Forest (834 acres) is unknown and as such, the Service will analyze effects resulting from even-aged timber harvest. That type of effect is described below under Response to Removal or Alteration of Roosting/Foraging Habitat.

NLEBs could be harmed, harassed, or killed as a result of tree removal activities that take place when the species is present in summer roosting habitat. The NLEB will only be exposed to these types of adverse effects, however, in about 0.0003% (568 acres) of the action area (1.7 million acres). Forest actions that will affect the NLEB in this manner include temporary and permanent ROW construction, prospecting drill site placement, and timber harvest and mechanical site preparation occurring on state and county lands as a result of new access being provided by the Forest. Effects will not occur simultaneously across the affected areas, but will instead occur over an approximately 15-year time period. Associated timber harvest may occur during the summer roosting period in patches ranging from 40 acres to 120 acres (Attachment A). NLEB habitat is abundant and well distributed throughout the Forest and there will be large areas of intact forested habitat adjacent to each project area. As mentioned, there are 1.7 million acres of potential NLEB habitat in the action area, of which 2,650,931 acres (92 percent; 2,434,526 acres) are currently considered suitable for NLEB use during the summer roosting period.

For the two actions where take is not exempted in the 4(d) rule, both proposed actions involve temporary tree removal during the summer roosting season along narrow linear corridors or as 0.5 acre or smaller openings within areas of abundant suitable habitat. With the mixed-type forests remaining relatively intact and only small gaps (i.e., forest trails, small roads) of tree removal, foraging and traveling for the NLEB is not anticipated to be greatly impacted. However, the loss of up to a total of 84 acres during the summer roosting season for NLEB is anticipated to result in take of the species in the form of mortality or harassment. The loss of a total of 80 acres is attributed to drill pads, heliports, barge landings and new temporary roads associated with hardrock minerals prospecting. The remaining 4 acres of suitable habitat loss

during the summer roosting season is attributed to the likely scenario that trail clearing associated with the South Fowl Snowmobile Trail will occur on only one alternative, as such, the worst case scenario for habitat clearing will be 3.7 acres. The amount that will be directly attributed to lethal take resulting from the removal of suitable maternity roosts, however, is likely to be much less than 3.7 acres. The reasons for this are that either alternative will emphasize creation of a winding trail through brushy areas and cutting as few trees as possible to maintain forest overstory.

#### Response to Removal or Alteration of Roosting/Foraging Habitat

The best available data indicate that the NLEB shows a varied degree of sensitivity to timber harvesting practices (Menzel et al. 2002, Owen et al. 2002). In central Arkansas, the three classes of mixed pine-hardwood forest that supported the majority of the roosts were partially harvested or thinned, unharvested (50–99 years old), and group selection harvest (Perry and Thill 2007). Forest size and continuity are also factors that define the quality of habitat for roost sites for NLEB. Lacki and Schwierjohann (2001) stated that silvicultural practices could meet both male and female roosting requirements by maintaining large-diameter snags, while allowing for regeneration of forests.

In addition to impacts on roost sites, timber harvest practices can also affect foraging and traveling habitat, and thus, NLEB fitness. In southeastern Missouri, the NLEB showed a preference for contiguous tracts of forest cover (rather than fragmented or wide open landscapes) for foraging or traveling and, different forest types (rather than monoculture) interspersed on the landscape increased likelihood of occupancy (Yates and Muzika 2006). Similarly, in West Virginia, female NLEB spent most of their time foraging or travelling in intact forest, diameter-limit harvests (70–90 year-old stands with 30–40 percent of basal area removed in the past 10 years), and road corridors, with no use of deferment harvests (similar to clearcutting) (Owen et al. 2003). In Alberta, Canada NLEB avoided the center of clearcuts and foraged more in intact forest than expected (Patriquin and Barclay 2003). On Prince Edward Island, Canada, female NLEBs preferred forested areas more than open areas, with foraging areas centered along forest-covered creeks (Henderson and Broders 2008). In general, NLEBs prefer intact mixed-type forests with small gaps (i.e., forest trails, small roads or forest covered creeks) in forest with sparse or medium vegetation for foraging and traveling rather than fragmented habitat or areas that have been clearcut.

Sustainable timber harvest activities do not typically lead to permanent losses of suitable roosting, foraging, or traveling habitat for NLEB. On the contrary, sustainable timber harvest activities are compatible with the long-term maintenance of suitable forested habitat for the species. Many sustainable timber harvest practices will result in little change in terms of the amount or quality of roosting or foraging habitat for NLEB. For example, selective harvest regimes are not anticipated to result in alterations of forest to the point where NLEB would be expected to significantly alter their normal behaviors within the affected areas. The treatment areas will still be forested with only small openings left by the harvest treatment. Similarly, small patch cuts, wildlife openings, and forest roads would be expected to serve as foraging areas

or travel corridors and not as barriers to movement. Therefore, the only impacts of concern from many forest treatments are the potential for death or injury during active season tree removal.

However, localized long-term reductions in suitable roosting and/or foraging habitat can occur from various forest practices. For example, large clearcuts (that remove a large portion of a known or assumed home range) would result in a temporary “loss” of forest for NLEB. In these cases, “temporary” would be for many years (amount of time to reproduce suitable roosting/foraging habitat). Foraging would be possible prior to roosting depending on the juxtaposition of cuts to other forest regimes.

As stated above, NLEB have been found in forests that have been managed to varying degrees and as long as there is sufficient suitable roosting and foraging habitat within their home range and travel corridors between those areas, we would expect NLEB colonies to persist in managed landscapes.

In addition to the type of timber harvest, the extent of impact from tree removal is influenced by the amount of suitable habitat available within and nearby NLEB home ranges. Some portions of the NLEB’s range are more forested than others. In areas with little forest or highly fragmented forests (e.g., western U.S. edge of the range, central Midwestern states; see Figure 1), impact of forest loss would be disproportionately greater than similar sized losses in heavily forested areas (e.g., Appalachians and northern forests). Also, the impact of habitat loss within a NLEB’s home range is expected to vary depending on the scope of removal. Silvis et al. (2014) modeled roost loss of NLEBs and Silvis et al. (2015) removed known NLEB roosts during the winter in the field to determine how this would impact the species. Once removals totaled 20–30 percent of known roosts, a single maternity colony network started showing patterns of break-up. As explained in the Status of Species section, sociality is hypothesized to increase reproductive success (Silvis et al. 2014); thus, smaller colonies are expected to have lower reproductive success.

Clearcutting and similar harvest methods that result in low density of potential roost trees may prompt the need for longer flights and increased energetic demands by NLEB at a time when they may already be energetically challenged. NLEB emerge from hibernation with their lowest annual fat reserves and soon thereafter must return to their summer home ranges. The spring staging period precedes migration to summer habitats. During this period, NLEB remain near hibernacula. They feed and reenter hibernacula daily, where they enter torpor to minimize energy loss during the day. Individuals may increase fat reserves during this period, but are unlikely to regain the large amounts of fat lost during hibernation.

For several reasons, winter tree harvest that substantially alters summer roosting habitat for NLEB could result in adverse effects to affected individuals. NLEBs have summer home range fidelity (Foster and Kurta 1999; Patriquin et al. 2010; Broders et al. 2013). Activities that take place during the winter that render summer habitats unsuitable may force NLEB to rely on low energy reserves to find new roosts or foraging areas. This may put additional stress on females that are often pregnant. Hibernation and reproduction are the most energetically demanding

periods for temperate-zone bats, including the NLEB (Broders et al. 2013). Bats may reduce metabolic costs of foraging by concentrating efforts in areas of known high prey profitability, a benefit that could result from the bat's local roosting and home range knowledge and site fidelity (Broders et al. 2013). Cool spring temperatures provide an additional energetic demand, as bats need to stay sufficiently warm or enter torpor (state of mental or physical inactivity). Entering torpor comes at a cost of delayed parturition, which may affect the fitness of yearling NLEB. Bats born earlier in the year have a greater chance of surviving their first winter and breeding in their first year of life (Frick et al. 2009). Delayed parturition may also be costly because young of the year and adult females would have less time to prepare for hibernation (Broders et al. 2013). Female NLEB typically roost colonially, with their largest population counts occurring in the spring or early summer, presumably as one way to reduce thermal costs for individual bats (Foster and Kurta 1999). Therefore, similar to other temperate bats, NLEB have multiple high metabolic demands (particularly in spring) and must have sufficient suitable roosting and foraging habitat available in relatively close proximity to allow for successful reproduction.

In summary, timber harvests and tree clearing associated with SUP actions could have both adverse and beneficial effects on habitat suitability for the NLEB. The approximately 1,741 acres of habitat that will be affected by these activities are scattered throughout the 1.7 million-acre Forest, so there will be large amounts of unaffected, intact forested habitat adjacent to each treatment area. In addition, the potential for effects from timber harvest/other tree removal will be minimized by temporal restrictions (winter tree removal only) on at least 69 percent of proposed area (1,173 acres). Winter harvest may still result in adverse effects when tree densities are reduced to a level that decreases their suitability as summer habitat, but it has the advantage of avoiding direct mortality to roosting bats. NLEBs may be affected by the immediate loss of suitable habitat on significantly less than 1,741 acres (total tree removal related to SUP actions) because tree removal will not occur simultaneously in all areas, but will be distributed both spatially and temporally across the Forest over a period of at least 15 years. Tree clearing associated with temporary road construction, minerals prospecting or other temporary access activities will occur on approximately 415 acres, however, most of this removal will consist of narrow linear corridors or small (< 0.5 acre) patches – this will cause an insignificant habitat loss and will likely not result in take. As a result, we conclude that the overall habitat suitability or availability for NLEB foraging and roosting within the action area should be minimally affected by proposed SUP actions.

#### *Effects from Noise, Disturbance*

Noise and vibration and general human disturbance are stressors that may disrupt normal feeding, sheltering, and breeding activities of the NLEB. Many activities may result in increased noise/vibration/disturbance that may result in effects to bats. Bats may be exposed to noise/vibration/disturbance from various USFS activities near their roosting, foraging, or swarming areas.

Significant changes in noise levels in an area may result in temporary to permanent alteration of bat behaviors. The novelty of these noises and their relative volume levels will likely dictate the

range of responses from individuals or colonies of bats. At low noise levels (or farther distances), bats initially may be startled, but they would likely habituate to the low background noise levels. At closer range and louder noise levels (particularly if accompanied by physical vibrations from heavy machinery and the crashing of falling trees) many bats would probably be startled to the point of fleeing from their day-time roosts. For projects with noise levels greater than usually experienced by bats, and that continue for multiple days, the bats roosting within or close to these areas are likely to shift their focal roosting areas further away or may temporarily abandon these roosting areas completely.

There is limited literature available regarding impacts from noise (outside of road/traffic) on bats. Gardner et al. (1991) had evidence that an NLEB conspecific, Indiana bat, continued to roost and forage in an area with active timber harvest. Also see the timber harvest Section above regarding other similar studies for NLEB. They suggested that noise and exhaust emissions from machinery could possibly disturb colonies of roosting bats, but such disturbances would have to be severe to cause roost abandonment. Callahan (1993) noted that the likely cause of the bats in his study area abandoning a primary roost tree was disturbance from a bulldozer clearing brush adjacent to the tree. However, his last exit count at this roost was conducted 18 days prior to the exit count of zero. Indiana bats have also been documented roosting within approximately 300 meters of a busy state route adjacent to Fort Drum Military Installation (Fort Drum) and immediately adjacent to housing areas and construction activities on Fort Drum (US Army 2014). Bats roosting or foraging in all of the examples above have likely become habituated to the noise/vibration/disturbance. Novel noises would be expected to result in some changes to bat behaviors.

In summary, NLEB currently present in the forest are expected to be tolerant to a certain degree of existing (prior to initiation of proposed activities) noise, vibration, and disturbance levels. However, temporary and novel noise/vibration/disturbance associated with heavy equipment operation and tree cutting may result in responses by bats that are roosting or foraging in these areas. We expect that affected bats are likely to shift their focal roosting areas further away or may temporarily abandon these roosting areas completely.

### **Effects of Interrelated or Interdependent Actions**

Interrelated actions are those that are a part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Anticipated interrelated or interdependent actions associated with the proposed project were discussed above.

We considered the notion that future mining activities may occur following minerals prospecting. Under 50 CFR §402.14(k), an opportunity for incremental review exists when an activity is “authorized by a statute that allows the agency to take incremental steps towards the completion of the action.” We understand that no extraction or development activity may occur prior to additional future Forest action, predicated by any necessary additional Section 7 consultation.

## **Cumulative Effects**

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

There are several mining projects pending in the Mesabi Iron Range in Minnesota, but each will require separate consultation pursuant to section 7 of the ESA. Any other actions conducted on Superior National Forest lands will either be conducted by the USFS, or will require approval by the USFS and thus will require separate section 7 consultation. Therefore, cumulative effects, as defined in the ESA, are not expected to occur on Superior National Forest lands.

Numerous state, county, and private land use activities that may affect the NLEB occur within the action area including: timber harvest, recreational use, road maintenance and construction, and residential, industrial and agricultural development and related activities. The BA indicated (p. 18) that approximately 20,109 acres are planned for timber harvest from 2015-2020 on state and county land within the Forest that are not associated with the SUP actions outlined in this BO. Harvest on state and county lands may alter available NLEB summer roosting habitat. Based on the same rationale discussed above on Federal lands and that NLEB habitat is abundant and well distributed within the Forest, we anticipate that state and county harvest activities will result in minimal cumulative effects to the species or its habitat.

## **Summary of Effects**

### *Impacts to Individuals*

Potential effects of the action include direct effects to NLEB present within the action area when activities are being conducted and indirect effects as a result of changes in habitat suitability. The types of timber harvest activities that may affect habitat suitability include even-aged management (clearcut/coppice, shelterwood/seed tree) that occur on state and county lands as a result of road construction or SUP access. Direct effects include mortality, injury, harm, or harassment as a result of removal of roost trees, noise, and general human presence.

The Forest's conservation measures, as well as those that will be applied to state and county timber harvests, which include avoiding or minimizing to the extent practicable (in regards to minerals prospecting) and leaving all snags possible in harvest areas, will reduce the potential for direct effects to the NLEB. However, the potential for direct effects from tree removal and associated human presence is greatest during spring and summer (mid-April through July) when bats return from hibernation, spring temperatures result in periodic use of torpor, and non-volant young may be present. Direct impacts to individuals are anticipated as the result of tree removal associated with road, trail, drill pad and building construction during the summer roosting period. Any bats impacted by WNS will have additional energetic demands and reduced flight capability. Again, to date, WNS has not been detected in Minnesota; however, the fungus that causes WNS was first detected in 2011–2012.

Indirect effects from the action may result from habitat modification and primarily involve changes to roosting and foraging suitability. Timber harvests and tree clearing associated with road-related activities and recreation trails could have both adverse (such as active season tree removal of a roost tree) and beneficial effects on habitat suitability for the NLEB. Given the scope of the projects in relation to the overall action area, these projects will not substantially alter the overall availability or suitability of NLEB roosting or foraging habitat in the action area.

While none of the USFS's proposed actions will alter the amount or extent of mortality or harm to NLEB resulting directly from WNS, the USFS's proposed action can be neutral, negative, or beneficial to bats. The continued implementation of the USFS's monitoring efforts will provide additional information on the effect of the USFS's actions on affected bats. Minimal cumulative effects are expected.

While analyzing the effects of the proposed action, we identified the life stages that would be exposed to the stressors associated with the proposed action, and analyzed how those individuals would respond upon exposure to the stressors. From this analysis, we determined that:

- 1) Neither hibernating bats nor their hibernacula will be exposed to the project stressors as there are currently no known hibernacula within the vicinity of the Action Area.
- 2) NLEB during the spring-fall period will be exposed to various project stressors and their responses to some of them are likely to be adverse.

We considered the possibility for NLEB to be exposed to the effects of project activities at currently unknown roost sites. If this should occur, we anticipate harassment of NLEB that may flush bats during daylight and cause them to temporarily or permanently abandon their roosts (which may have pups). In addition, mortality of pups and/or adults is possible from tree removal during the summer maternity period. In summary, there will be impacts to individual bats in terms of either reduced survival or reproduction.

#### *Impacts to Populations*

As we have concluded that individual bats are likely to experience reductions in either their annual or lifetime survival or reproductive rates, we need to assess the aggregated consequences of these effects to exposed individuals as they relate to the population to which these individuals belong.

The action area will continue to provide suitable habitat conditions for NLEB foraging and roosting during the summer while the proposed ROW construction and associated timber harvest, permanent site and trail development, and minerals prospecting activities are implemented and after they are complete. There is potential for direct take of the species. The extent of the area where direct take is likely due to the proposed action in relation to the entire action area, and the current distribution and abundance of NLEB habitat on the Superior National

Forest (as described in the Environmental Baseline), the effects of the proposed activities are unlikely to reduce the likelihood that NLEB will continue to survive and reproduce on the Forest.

### *Impacts to the Species*

Many of the proposed actions of the USFS are likely to result in benefits to the species over the long term due to the maintenance of a mosaic of forest types. While we recognize that the status of the species is uncertain due to WNS, given the environmental baseline, and the intensity, frequency, and duration of the project impacts, we find that the proposed project is unlikely to have appreciable impacts on the population that inhabits the action area. Thus, no component of the proposed action is expected to reduce the reproduction, numbers, or distribution of the NLEB rangewide. Therefore, we do not anticipate a reduction in the likelihood of both survival and recovery of the species as a whole.

Based on the analysis above, despite the anticipated population impacts, the proposed action should not decrease the reproduction, numbers, or distribution of the NLEB in a way or to the extent that would cause an appreciable reduction in the likelihood of both survival and recovery of the species as a whole.

## **CONCLUSION**

After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the northern long-eared bat. No critical habitat has been designated to date for this species; therefore, none will be affected.

## **INCIDENTAL TAKE STATEMENT**

Section 9 of the ESA and federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR § 17.3). Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

On April 2, 2015, the Service published an interim species-specific rule pursuant to section 4(d) of the ESA for NLEB (80 FR 2371). The Service's interim 4(d) rule for NLEB exempts the take

of NLEB from the section 9 prohibitions of the ESA, when such take occurs as follows (see the interim rule for more information):

- (1) Take that is incidental to forestry management activities, maintenance/limited expansion of existing rights-of way, prairie management, projects resulting in minimal (<1 acre) tree removal, provided these activities:
  - a. Occur more than 0.25 mile (0.4 km) from a known, occupied hibernacula;
  - b. Avoid cutting or destroying known, occupied roost trees during the pup season (June 1–July 31); and
  - c. Avoid clearcuts (and similar harvest methods, *e.g.*, seed tree, shelterwood, and coppice) within 0.25 (0.4 km) mile of known, occupied roost trees during the pup season (June 1–July 31).
- (2) Removal of hazard trees (no limitations).
- (3) Purposeful take that results from
  - a. Removal of bats from and disturbance within human structures and
  - b. Take resulting from actions relating to capture, handling, and related activities for northern long-eared bats by individuals permitted to conduct these same activities for other species of bat until May 3, 2016.

There are currently no known roost trees or hibernacula within 0.25 miles of the proposed project areas. However, we anticipate this will change as the SNF and others continue survey efforts. Therefore, at the time that known roost trees, maternity roosts, or hibernacula are identified, the incidental take will become effective, provided the above measures are implemented.

Anticipated incidental take from activities addressed by the 4(d) rule and are already exempted, therefore no terms and conditions will be required for those activities. Accordingly, there are no reasonable and prudent measures or terms and conditions that are necessary and appropriate for twenty-five SUP actions because the anticipated incidental take would be exempted by the interim 4(d) rule (Table 2). The activities that are covered by the interim 4(d) rule include forest management, limited expansion of transportation and utility rights-of-way, and limited tree removal. The remainder of this Incidental Take Statement addresses the incidental take that we anticipate to result from those elements of the proposed action that would not be exempted by the 4(d) rule. The three project design criteria mentioned above (1, a-c) have already been incorporated into the conservation measures for all actions associated with this BO, therefore the measures associated with known roost trees or hibernacula will not be reiterated in the Terms and Conditions.

#### **Amount or Extent of Take**

If NLEB are present or utilize an area proposed for tree clearing or other disturbance, incidental take of NLEB could occur. The Service anticipates incidental take of the NLEB will be difficult to detect for the following reasons: (1) the individuals are small and occupy summer habitats where they are difficult to find; (2) NLEB form small, widely dispersed maternity colonies under loose bark or in the cavities of trees, and males and non-reproductive females may roost individually which makes finding the species or occupied habitats difficult; (3) finding dead or

injured specimens during or following project implementation is unlikely; (4) the precise distribution and density of the species within its summer habitat in the action area is unknown; and, (5) in many cases incidental take will be non-lethal and undetectable.

Monitoring to determine actual take of individual bats within an expansive forested area is unlikely to produce useful information unless every individual tree that may contain suitable roosting habitat is inspected by a knowledgeable biologist when felled. To minimize or avoid take that is caused by felling trees with roosting bats, a similar tree-by-tree inspection would have to occur before trees are felled. Inspecting individual trees is not considered by the Service to be a reasonable survey method and is not recommended as a means to determine incidental take. However, the real extent of potential roosting and foraging habitat affected can be used as a surrogate to monitor the level of take.

The Service anticipates that no more than 1,398 acres of potential NLEB habitat will be disturbed to the point that take will occur as a result of these ongoing project activities on the Forest. This includes 1,314 of state and county winter harvest that is exempted under the 4(d) rule and 84 acres from road, trail or drill site construction that are not exempted by the 4(d) rule will occur during a period when bats will be present. As stated previously, the loss of 80 acres are attributed to drill pads, heliports, barge landings and new temporary roads associated with hardrock minerals prospecting and 4 acres are attributed to the new segment alternative South Fowl Snowmobile Trail that has the greatest amount for total estimated tree removal. All take is anticipated to occur in the forms of mortality, harm, or harassment.

Type of Take	Total Acres
Exempted	1,314
Non-exempted <sup>1</sup>	84

**Table 2.** *Incidental take of NLEB for 27 ongoing actions on the SNF*

<sup>1</sup> non-exempted projects include the South Fowl Snowmobile trail and the Federal Hardrocks Minerals Prospecting Permit EIS

**Effect of the Take**

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to NLEB. No critical habitat has been designated for NLEB, so none would be impacted.

**Reasonable and Prudent Measures**

The Service believes the following reasonable and prudent measures (RPM) are necessary and appropriate to further minimize take of NLEB.

- 1) Minimize or avoid incidental lethal take due to the proposed actions.
- 2) Minimize adverse effects to NLEB habitat.

- 3) Document and report to the Service annually any known NLEB mortality within the project area that is attributed to the actions not exempted by the 4(d) rule.

### **Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the ESA, the USFS must comply with the following terms and conditions for two projects that have been found to be non-exempted by the 4 (d) rule (the South Fowl Snowmobile Trail and the Federal Hardrocks Prospecting Permit EIS), which implement the reasonable and prudent measures. These terms and conditions are non-discretionary.

*RPM 1: Minimize or avoid incidental lethal take due to the proposed actions.*

Term and Condition #1. The Forest shall ensure that all contractors and subcontractors are aware of and adhere to the specification of proposed work as outlined in the Description of the Proposed Action section of this document and in these Terms and Conditions.

*RPM 2: Minimize adverse effects to NLEB habitat*

Term and Condition #1. Where feasible, minimize the removal of any tree greater than 3” DBH when constructing and maintaining recreational trails and hardrock minerals drill sites.

*RPM 3: Document and report to the Service annually any known NLEB mortality within the project area that is attributed to the actions not exempted by the 4(d) rule.*

Term and Condition #1. Mortality reports should be provided to the Service by December 31 or each calendar year.

The Service concludes that no more than 84 acres of suitable NLEB roosting habitat will be removed between April 1 and September 30 as a result of the proposed actions not covered by the 4(d) rule. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Superior National forest must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

### **Reporting Requirements**

1. The USFS shall provide report summarizing the activities (and acreages) described in this ITS annually and upon completion of the project(s).

2. The USFS shall make all reasonable efforts to educate personnel to report any sick, injured, and/or dead bats (regardless of species) located on the Superior National Forest immediately to the Forest Biologist. The USFS point of contact will subsequently report to the Service's Twin Cities Field Office (TCFO) (612-725-3548) and/or the Minnesota Department of Natural Resources (MNDNR; see <http://www.dnr.state.mn.us/wns/index.html> or call 1-888-345-1730). No one, with the exception of trained staff or researchers contracted to conduct bat monitoring activities, should attempt to handle any live bat, regardless of its condition. If an injured bat is found, if possible, effort should be made by trained staff (with rabies vaccination) to transfer the animal to a wildlife rehabilitator. If needed, TCFO and/or MNDNR will assist in species determination for any dead or moribund bats. Any dead bats believed to be NLEB will be transported on ice to the TCFO or MNDNR. If an NLEB is identified, TCFO will contact the appropriate Service law enforcement office. Care must be taken in handling dead specimens to preserve biological material in the best possible state. In conjunction with the care of sick and injured fish or wildlife and the preservation of biological materials from dead specimens, the USFS has the responsibility to ensure that information relative to the date, time, and location of NLEB, when found, and possible cause of injury or death of each is recorded and provided to the Service. In the extremely rare event that someone has been bitten by a bat, please keep the bat in a container and contact the local health department.

## **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid the adverse effects of a proposed action on listed species or critical habitat, to help carry out recovery plans, or to develop information.

The Service has identified the following actions that, if undertaken by the USFS, would further the conservation of the northern long-eared bat. We recognize that limited resources and other agency priorities may affect the ability of the USFS to conduct these activities at any given time.

1. Assist with WNS investigations, where feasible. For example:
  - a. Monitor the status/health of known colonies;
  - b. Collect samples for ongoing or future studies; and,
  - c. Allow USFS staff to contribute to administrative studies related to WNS (on or off of USFS lands, as appropriate).
  
2. Monitor pre- and post-WNS distribution of the northern long-eared bat on the Superior National Forest.
  - a. Search for hibernacula within the National Forest;
  - b. Conduct inventory surveys;
  - c. Conduct radio telemetry to monitor status of northern long-eared bat colonies; and,
  - d. Participate in North American Bat Monitoring Program (NABat; a national effort to monitor and track bats) through submission of survey data.

3. Encourage research and administrative studies on the summer habitat requirements of the northern long-eared bat on the Superior National Forest that:
  - a. Investigate habitat characteristics of the forest in areas where pre- and post-WNS northern long-eared bat occurrences have been documented (acoustically or in the hand) (e.g. forest type, cover, distance to water).
  - b. Investigate the northern long-eared bat use (acoustics, radio telemetry) of recently managed areas of different prescriptions.
  
4. For those projects that were found to be non-exempted for the 4(d) rule minimize, to the greatest extent practicable, the removal of any tree greater than 3" DBH that has characteristics of loose bark, cracks or crevices that may be suitable for NLEB roosting:
  - a. Between April 1 and September 30.
  - b. During the NLEB pup season of June 1 and July 31.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the conservation recommendations carried out.

## **REINITIATION NOTICE**

This concludes formal consultation for the USFS's actions outlined in your request dated March 23, 2015. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over an action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such a take must cease pending reinitiation.

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