

BIOLOGICAL EVALUATION

**OF THE
IRON MAPLE TIMBER SALE
TOWN OF BARTLETT,
CARROLL COUNTY
NEW HAMPSHIRE**

ON

**FEDERALLY ENDANGERED, THREATENED, AND PROPOSED SPECIES AND
REGIONAL FORESTER SENSITIVE SPECIES**

**USDA Forest Service
Saco Ranger District
White Mountain National Forest
33 Kancamagus Highway
Conway, New Hampshire, 03818**

Prepared by: /s/Kathy Starke Date: April 4, 2003
Kathy Starke, District Biologist

INTRODUCTION

This Biological Evaluation is prepared in accordance with direction provided in Forest Service Manual (FSM) 2672.42 and Section 7 of the Endangered Species Act. It addresses potential effects of the proposed Iron Maple Timber Sale on federally endangered, threatened, and proposed (TEP) species and Regional Forester Sensitive Species (RFSS) that may occur within the analysis area. Federally endangered and threatened species are those determined for eligibility based on guidelines listed by the United States Department of Interior Fish and Wildlife Service (USFWS) under Section 4 of the Endangered Species Act (ESA). Species included on the Regional Forester Sensitive Species list must occur within the proclamation boundary of the Forest and are either a candidate for federal listing under ESA, a species that has been delisted under ESA in the last five years, or are globally (G or T) or nationally (N) ranked as a 1–3 by The Nature Conservancy and Association of Biodiversity Information or are considered Sensitive on the Forest based on a Risk Evaluation. The Regional Forester Sensitive Species list is available on the Internet at www.fs.fed.us/r9/tes/tes.htm.

This Biological Evaluation reviews the Biological Assessment for Threatened and Endangered Species on the White Mountain National Forest (WMNF) in the States of Maine and New Hampshire (USFS 1999a) and the Biological Opinion on the Effects of the Land and Resource Forest Management Plan (United States Department of Agriculture Forest Service (USFS) 1986a, Forest Plan) and other Activities on Threatened and Endangered Species in the White Mountain National Forest and Incidental Take Statement and review and includes, as appropriate, the Terms and Conditions for Indiana bat outlined in this document (USFWS 2000). It also evaluates the Canada Lynx Conservation Assessment and Strategy (USFS 2000a) and associated conservation measures. The Conservation Assessment is based on information from a recent review of lynx ecology in the contiguous United States (Ruggiero et al. 2000). The Canada Lynx Conservation Assessment and Strategy is available on the Internet at www.fs.fed.us/r1/planning/lynx/lynx.html.

Analysis Area: The analysis area encompasses Habitat Management Units 506 and 509. The habitat contained within these units is characterized by typical northern hardwood stands on higher slopes with occasional enriched areas and scattered canopy softwoods. The lower sections contained some river terraces, and old river drainage channels. Hemlock, pine and a few seeps occur on the lower areas. Oak/pine was much more prominent on the south-facing slopes of Mt. Stanton. Red pine exists on the upper elevations of Mt. Stanton. New Hampshire Natural Heritage identified locations of hemlock-spruce-northern hardwood forest; sugar maple-beech-yellow birch forest; semi-rich mesic sugar maple beech forest; subneutral foamflower-graminoid forest seeps, and circumneutral forest seeps. None of these communities were determined to be imperiled or rare.

The west side of the analysis area is bounded by the Dry River Wilderness while the eastern end is bounded by private land. The fast-flowing Rocky Branch River bisects the analysis area. Meadow Brook and Otis Brook are named streams within the analysis area. There are several unnamed tributaries and small streams within the area. A beaver impoundment exists at the upper reaches of Otis Brook.

Granite slab exposures exist on the ridge called Iron Mountain. Iron Mountain has an old abandoned mine site surrounded by tailings. The site is relatively small, probably contained within 1 acre. The shaft resulting from this operation is horizontal and approximately 12 feet in length.

The **project area** is a subset within the **analysis area**. The above-mentioned beaver pond is within the project area however no vernal pools, cliff faces, or enriched sites were observed within the project area. The project area is north of the Rocky Branch River and south of Iron Mountain.

Table 1.

Description of the Alternatives

- Alternative 1: The No Action
- Alternative 2: The Proposed Action
- Alternative 3: Proposed Action with No New Road Construction
- Alternative 4: Uneven-age Management
- Alternative 5: Defers Harvest West of Otis Brook

UNIT	FOREST TYPE*	Alternative 2			Alternative 3			Alternative 4			Alternative 5		
		HARVEST METHODS+	ACRES	SEASON #	HARVEST METHOD	ACRES	SEASON	HARVEST METHOD	ACRES	SEASON	HARVEST METHODS	ACRES	SEASON
1	NH	CT	98	FW	CT	98	FW	STS	98	FW			
2	NH	CT	30	FW	CT	30	FW	STS	30	FW			
3	NH	CT	76	FW	CT	76	FW	STS	76	FW			
4	NH/MW	STS	32	FW	STS	32	FW	STS	32	FW			
5	NH	STS	15	FW	STS	15	FW	STS	15	FW			
6	NH	STS	43	FW	STS	43	FW	STS	43	FW	STS	43	FW
7	PB	CC	15	SFW	CC	15	SFW	GS	15	SFW	CC	15	SFW
8	NH	CC	11	SFW	CC	11	SFW	GS	11	SFW	CC	11	SFW
9	NH	CC	14	SFW	CC	14	SFW	GS	14	SFW	CC	14	SFW
10	NH	ST (oak)	15	SFW	DS	15	SFW	GS	15	SFW	ST	15	SFW
11	NH	STS	94	FW	STS	94	FW						
12	NH	CT	39	FW	CT	39	FW	STS	39	FW	CT	39	FW
TOTALS			482			482			388			137	

***Forest Types**

NH: Northern Hardwood
 MW: Mixedwood
 PB: Paper Birch

+Harvest Methods

CT: Commercial Thinning
 CC: Clear-cut
 STS: Single Tree Selection
 ST: Seed Tree Cut
 DS: Delayed Selection Harvest
 GS: Group Selection Harvest

Season of Harvest

SFW: Summer/Fall/Winter (Approx June 15th to March 15th depending on ground conditions)
 FW: Fall/Winter (Approx September 15th to March 15th depending on ground conditions)

PREFIELD REVIEW (See BE Table)

Conclusions about whether threatened, endangered, proposed, and sensitive (TEP&S) species and their habitat are known or suspected within the analysis area are based on a review of the New Hampshire Natural Heritage Inventory Program (NHNHI) database and a review of literature on habitat requirements and known occurrences of each species. Most range and habitat information for vertebrate species is taken from DeGraaf and Yamasaki 2001, DeGraaf et al. 1992, and Foss 1994. These publications are based on an extensive literature review of wildlife species that occur in New England, with information from local research or surveys included when available. Federal Recovery Plans (USFWS 1982, 1983, 1991a, 1991b, 1992a, 1992b, 1996) also are reviewed to evaluate habitat preference of federally listed species. The primary source used to evaluate rare plant species, potential habitats, and location of exemplary communities in the analysis area is a landscape analysis (a pre-field prediction tool that used topographic maps, soil maps, geological information, and known information on rare plants and communities) that was conducted for the New Hampshire portion of the Forest (Sperduto and Engstrom 1995). Other information on range and habitat preference for plants is based on information from local flora and inventories (Seymour 1969, Sperduto 1997, Storks and Crow 1979), and field guides (Harris et al. 1964, Newcomb 1977). Information on the two butterfly species on the Regional Forester Sensitive Species list came from H. Pavulaan, personal communication.

Detailed information is available about the federal TEP&S species known to occur on the White Mountain National Forest. Virtually all existing individuals of Robbins' cinquefoil (*Potentilla robbinsiana*) and breeding pairs of bald eagles (*Haliaeetus leucocephalus*) are closely monitored by various agencies. A habitat model developed for small-whorled pogonia (*Isotria medeoloides*) (Sperduto 1988) provides information on habitat parameters and potential occurrence of this species across the Forest. The recent Biological Assessment of Threatened and Endangered Species on the Forest and the accompanying Conference Report and Biological Opinion from the USFWS has provided updated information on the status and habitat requirements of all federal TEP&S species on the White Mountain National Forest (USFS 1999a, USFWS 2000).

Less detailed information is available on the potential occurrence and habitat preferences within the White Mountain National Forest for other federal TEP&S species including Indiana bat, gray wolf (*Canis lupus*), eastern cougar (*Felis concolor cougar*), and Canada lynx (*Felis lynx Canadensis*), as well as most Regional Forester Sensitive Species. Track inventories conducted for Canada lynx on the Forest in the late 1980's and early 1990's and recent hair pad surveys (1999, 2000, and 2001) have not detected this species (Brocke et al. 1993, Kingman 1986, Litvaitis et al. 1987, unpublished White Mountain National Forest data). More bat surveys are being conducted on the forest and adjacent areas. However, in most cases field inventories are often not available. The one exception is the American peregrine falcon (*Falco peregrinus anatum*) that has been closely monitored in the State for many years because of its status as a federally listed species until 1999. A more recent effort to assess wildlife populations on the Forest has provided some information on the status of certain Regional Forester Sensitive Species (USFS 1993, 1994, 1996, 1998, 1999b, 2000).

Species Suspected or Documented as Present in analysis area

Based on a pre-field review of all available information, it was determined potential habitat existed for two federally endangered species, Indiana bat and Small-whorled pogonia and seven Regional Forester Sensitive Species; eastern small-footed myotis, American peregrine falcon, northern bog lemming, arnica, piled-up sedge, White Mountain silverling and nodding pogonia (Table 2).

Potential habitat for gray wolf, eastern cougar, and Canada lynx is present in the analysis area (Table 2) but the species are considered extirpated from the area.

Habitat Disturbance Level

It is assumed that habitat disturbance level is high for timber harvest activities.

FIELD RECONNAISSANCE

Habitat

General habitat condition of the analysis area was determined from compartment records and field and stream surveys over the past 10 years. New Hampshire Natural Heritage Inventory survey data indicates there are several communities or sensitive plants of interest within the analysis area. The Saco district biologist has visited the area numerous times over the past 12 years. The entire Rocky Branch Wildlife permaplot transect and over half of the Meserve Brook transect lies within the analysis area but outside the project area. Field reports were reviewed for presence of listed species. None were documented on these permaplot transects.

Species

Animals

It will be assumed that **Indiana bat**, **eastern small-footed myotis**, and **northern bog lemming** do occur in the analysis area so a field inventory is not necessary. Audubon Society of NH has been surveying and monitoring for peregrines statewide for the past 18 years. There have been no sightings of peregrines at the cliffs within the analysis area. In addition the cliffs are outside of the project area. Therefore there will be no further analysis of peregrine falcons.

Plants

NHNHI botanists conducted surveys within the analysis area in the years 1991, 1992, 1993 and 1998 (NHNHI reports 1992, 1993, 1994, 1999). None of the suspected plants (small-whorled pogonia, arnica, piled-up sedge, White Mountain silverling or nodding pogonia) were found within the project area nor analysis area. Therefore no further analysis of these species will be conducted.

ANALYSIS OF THE EFFECTS OF ALL ALTERNATIVES

FEDERAL SPECIES

INDIANA BAT (*Myotis sodalis*)

The life history and habitat requirements for Indiana bat are described in the literature (Humphrey et al. 1977, Brady et al. 1983, Kurta et al. 1993, Romme et al. 1995, USFWS 1996) and have been summarized in the recent Biological Assessment (USFS 1999a) and Biological Opinion (USFWS 2000) for the White Mountain National Forest. This species occurs across the eastern United States. Their distribution becomes more restricted in winter when a majority of the population migrates to winter hibernacula in large limestone caves in Indiana, Kentucky, and Missouri. Smaller hibernacula occur in other eastern States.

In spring, when bats leave the hibernacula, males and females appear to disperse separately with males tending to stay relatively close to the hibernacula area and females searching for trees suitable for a maternity site. Recent literature indicates that this species will inhabit both riparian and upland forests.

Individuals prefer to roost in snags or living trees greater than 9" dbh under exfoliating bark with forest canopy closure between 60% and 80%. Maternity colonies usually are located in the largest trees that have some daily exposure to sunlight. Usually several roost trees are used within a maternity colony. Females are pregnant when they arrive at summer maternity colonies usually between April and May. They generally give birth to one young between late June and early July. Young start to fly between July and August. It should be noted that Romme's habitat suitability model (Romme et al. 1995) was developed in the core range of the Indiana bat, which is south of New Hampshire and Maine. It is not known if these criteria apply to the White Mountain National Forest, which is located at the northern fringe of this species range. Possibly individuals may roost in more open habitats in this area to attain greater solar gain as temperature is a key component of roost site selection. This species also prefers to forage over forested habitats with a canopy closure between 50% and 70% as well as riparian habitat and openings. They usually feed in the upper canopy of forested habitats for flying insects.

Occupied and unoccupied habitat

It is generally agreed that the Indiana bat has five habitat requirements: hibernation habitat, summer roosting habitat, maternity roosting habitat, foraging habitat, and fall swarming habitat (prior to hibernation). There is only one documented occurrence of Indiana bat on the White Mountain National Forest. Godin (1977) reported three occurrences of Indiana bat in New Hampshire. Two of the three specimens were examined by Tom French (biologist with the Massachusetts Division of Fisheries and Wildlife) and Larry Master (biologist with the Nature Conservancy) in the 1980's (Rowse, personal communication). It was determined these had been misidentified and were actually little brown bats (*Myotis lucifugus*). The third specimen could not be located. During a 1992 research project on bat habitat use on the White Mountain National Forest, one male Indiana bat was captured in a mist net (Krusic 1995, Krusic et al. 1996). There has been no female Indiana bats, maternity roosts, fall swarming, or winter hibernacula detected on the White Mountain National Forest. The closest hibernaculum is in Vermont approximately 80 air miles from the White Mountain National Forest boundary and approximately 175 miles from the analysis area. The hibernacula in Vermont are classified as Priority 3 (low priority) (von Oettingen, personal communication).

Until more information is gathered on preferred habitat for this species on this Forest, it is assumed Indiana bat could forage or roost anywhere on the White Mountain National Forest, except high elevation spruce /fir (>2500") and alpine habitats (USFS 1999a, USFWS 2000). However the probability of this species occurring on the Forest is considered to be very low. Most of the forested stands on the White Mountain National Forest have canopy closure greater than 90%. The literature indicates this species prefers more open habitats (50% to 70% canopy closure) in the core part of its range so, most likely, Indiana bat would need even more open habitats on the northern fringe of its range. Closed canopy forests on the White Mountain National Forest most likely do not provide suitable habitat for Indiana bat, especially females trying to raise young. This conclusion is somewhat supported by two bat studies that were conducted on the Forest in the early 1990's. Of approximately 360 bats caught in mist nets and harp traps on the Forest during the summers 1992-94, only one was suspected of being an Indiana bat (Krusic 1995, Krusic et al. 1996, Sasse 1995). The WMNF contracted bats surveys to occur at 8 locations across the Forest the summer of 2002. No Indiana bats were caught during these surveys (Chenger 2002). If this species did inhabit the White Mountain National Forest, it is estimated it would be here between May 15

and August 30 based on current information about the timing of Indiana bat arrival at winter hibernacula, (USFS 1999a, USFWS 2000).

The Iron Maple project area is under 2500 feet elevation and contains northern hardwoods with some softwood mixed in, however the likelihood of occupancy within the analysis area by Indiana bat is extremely low.

Direct and Indirect Effects

The Biological Assessment (USFS 1999a) and the Biological Opinion (USFWS 2000) describe effects of some management practices on Indiana bats. Bats in general utilize forested habitat for roosting and foraging, open habitat for foraging and road and stream corridors as travel-ways.

The No Action Alternative would have no direct or indirect effects on Indiana bat.

Direct effects to Indiana bats could occur from all Action Alternatives for units with proposed summer (June, July, August) harvest. It is unlikely that fall and winter harvesting (September through March) would directly affect Indiana bats in northern New Hampshire. Tree removal in the summer could displace or result in direct mortality of roosting bats or cause abandonment of traditional roost sites.

Decreasing the percent of canopy closure by removing trees in the thinning and singletree selection units would indirectly improve, though minimally, the foraging characteristics of the area for Indiana bats. The number of trees removed would be relatively small compared to the overall analysis area and habitat within it. The improved foraging characteristics may be short-lived, as the canopy would most likely close in within a few years after being thinned. A study of foraging and feeding activity of the more common bat species on the White Mountain National Forest indicated that individuals foraged over a combination of regeneration habitats interspersed with mature and non-forest habitats such as wetlands (Krusic et al. 1996). Indiana bats found in Vermont appeared to prefer areas near large openings.

The Action Alternatives could result in the loss of potential roost trees however this effect is mitigated by Forest Plan Standards which requires all standing dead trees to be left standing where possible (Forest Plan III-15) as well as implementation of the Terms and Conditions from the Biological Opinion.

Cumulative Effects

Throughout the range of this species, the primary causes for decline of this species are thought to be disturbance of winter hibernacula. Other disturbances include loss of forest cover, which may reduce roost trees; stream channelization; pesticide poisoning; indiscriminate handling and collection of individuals by biologists; and natural hazards such as floods and cold weather.

The White Mountain National Forest contains approximately 783,671 acres of which 627,171 acres are considered as potential habitat for the Indiana bat. Removal of trees for all activities (timber, recreation, hazardous tree removal, etc.) are estimated at below 5,000 acres per year or less than 0.80% of the potential Indiana bat habitat on the WMNF. The U.S. Fish and Wildlife Service determined this as an acceptable amount of Indiana bat non-hibernacula habitat disturbance.

There are no other foreseeable timber harvest projects in the analysis area at this time. The project area is composed primarily of mature hardwood stands. It is expected some trees fall during natural disturbances. Logging activity has occurred in the area since before the land became part of the White

Mountain National Forest. Over the last fifteen to twenty years, six timber sales (Cave Mt., Stairs Mt., Rocky Branch Roadside, Rocky Branch II, Back-A-Pickering, and Back-A-Pickering II) have occurred in this area. In addition, logging recently occurred on private land just outside the analysis area along Iron Mountain Road. This project and natural disturbances during the summer where trees are removed could disturb or displace bats from occupied roost trees. The low likelihood of this species occurring on the White Mountain National Forest as well as the small percentage of habitat affected by removal of trees during the summer and early fall and the implementation of the Terms and Conditions of the Biological Opinion minimize the potential for this effect.

In addition, Forest Plan Standards and Guidelines (USFS 1986a) provide a diversity of habitat conditions including maintaining mature and overmature habitats (Forest Plan-III-13), reserving large wildlife trees in managed units, retaining standing dead trees where possible (Forest Plan-III-15), and maintaining riparian habitats (Forest Plan-III-18). This, in conjunction with implementing the Terms and Conditions outlined for Indiana bat in the Biological Opinion (USFWS 2000), should ensure that adequate habitat is available for the Indiana bat should some individuals inhabit the White Mountain National Forest.

Effects Determination

Based on all information available, it is my opinion that the **No Action Alternative would have no effect and any of the Action Alternatives may affect but would not likely adversely affect the Indiana bat.** Since the likelihood of occupancy by Indiana bat is extremely low in the analysis area, any effects to Indiana bat from the Action Alternative would be insignificant (cannot meaningfully measure or detect).

TERMS AND CONDITIONS FROM THE BIOLOGICAL OPINION

The USFWS outlined Terms and Conditions that must be followed to minimize impacts of incidental take of Indiana bats on the White Mountain National Forest (USFWS 2000). The Iron Maple project is extremely small in relation to Indiana bat habitat. The Terms and Conditions Applicable throughout the year apply to this project.

Terms and Conditions Applicable throughout the year:

1. Develop and implement a management strategy for the WMNF activities occurring within a two-mile radius of the site where the single, male Indiana bat was caught in July, 1992.

The Iron Maple Project area is outside the Two-mile radius of where the Indiana bat was caught.

2. Retain all soft and hard snags in the 10-inch size class or above and wildlife trees within 300 feet of the following landscape features greater than five acres: permanent openings, ponds, lakes, beaver ponds, and wetlands. If hard snags and wildlife trees are not available in these areas leave at least six replacement trees per acre.

All harvest units are more than 300 feet from the beaver pond located within the project area. There are no other permanent openings, ponds, lakes or wetlands in the project area.

3. Leave all soft and hard snags in the 10-inch size class or above and wildlife trees within 100 feet of beaver ponds less than five acres. If hard snags and wildlife trees are not available in these areas leave at

least six replacement trees per acre.

The beaver pond within the project area may be less than five acres. However, no harvest activity is occurring within 100 feet of this beaver pond regardless of its size.

4. Protect all known roost trees on the WMNF until such time as they no longer serve as roost trees.

There are no identified Indiana Bat roost trees on the White Mountain National Forest.

Determination

Based on the information described above, it is my determination that **all Alternatives are consistent with the Terms and Conditions for Indiana bat outlined in the Biological Opinion (USFWS 2000).**

CANADA LYNX (*Lynx canadensis*)

The Canada lynx in the contiguous United States is listed as threatened under the Endangered Species Act of 1973 as amended (16 U.S.C. 1531 – 1536, 1538 – 1540) (Final Rule, Federal Register, March 24, 2000). The USFS entered into an agreement with the USFWS in February 2000 (USFS 2000c) to implement the Canada Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) and conserve all lynx habitat on National Forest lands within the range of lynx. A detailed account of Canada lynx ecology in the contiguous United States is available in Ruggiero et al. 2000. Other information and management direction regarding lynx includes the Biological Assessment on the effects of Forest Plans on Canada lynx (Hickenbottom et al. 1999), and the resulting Biological Opinion from USFWS in October 2000. Much of this information is available on the Internet at <http://www.r6.fws.gov/endspp/lynx> and <http://www.fs.fed.us/r1/planning/lynxlynx.html>.

Favored habitat for lynx is dense coniferous forest inhabited by snowshoe hare (*Lepus americanus*) (Brocke et al. 1993, Ruggiero et al. 2000). Canada lynx also will frequent a variety of other habitats including shrub swamps, aspen, paper birch, northern hardwoods, upland openings, bogs, caves, and ledges and feed on alternate prey sources (DeGraaf and Yamasaki 2001, Ruggiero et al. 2000). While individual lynx may occasionally disperse into the White Mountain National Forest, there is no evidence that lynx are resident or breeding on the Forest (Brocke et al. 1993, Kingman 1986, Litvaitis et al. 1987, unpublished White Mountain National Forest data). The lynx is considered extirpated on the White Mountain National Forest based on the fact that there has not been a confirmed record of lynx on the White Mountain National Forest in several decades (USFWS 2000).

This project is unaffected by the recent national lynx lawsuit in which the U.S. Fish and Wildlife Service was enjoined from concurring on determinations where the project "may affect" the lynx because lynx are not present on the WMNF. Should this species reoccupy the White Mountain National Forest, consultation with USFWS would occur as described under Section 7 of the Endangered Species Act.

CANADA LYNX CONSERVATION ASSESSMENT AND STRATEGY

The Canada Lynx Conservation Assessment and Strategy describes a process to define suitable and unsuitable lynx habitat and management units for lynx (Lynx Assessment Units) on federal lands (USFS 2000a). Lynx habitat and associated Lynx Assessment Units (LAUs) are defined across the Forest based

on lynx foraging and denning habitat. All existing softwood and mixedwood habitat greater than five years old and sites with the potential to grow softwoods or mixedwoods above 2500' are considered suitable lynx habitat. Additionally all existing softwood and mixedwood habitat greater than five years below 2500' is considered suitable lynx habitat. All softwoods and mixedwood habitat less than five years old across the Forest as well as Valley Bottom lands that are not currently typed as softwoods or mixedwood but have softwoods or mixedwood potential are considered unsuitable lynx habitat. All wetlands are considered suitable lynx habitat. All lower mountain slopes that are predominated by northern hardwoods, permanent openings, and alpine areas are considered non-lynx habitat.

Conservation Measures only apply to suitable and unsuitable lynx habitat within an LAU. LAU mapping criteria, factors used to define suitable and unsuitable lynx habitat, and application of Conservation Measures on the White Mountain National Forest are discussed in "Canada Lynx Assessment Unit and Habitat Mapping - White Mountain National Forest - DRAFT".

Conservation Measures Analysis for the Iron Maple Project.

The analysis area lies within LAU 6. Almost all of the land proposed for harvest in this project is currently classified as non-lynx habitat. A few pockets on the edges of some harvest units are currently classified as unsuitable. No denning habitat exists within the harvest units.

A map of suitable and unsuitable lynx habitat in the Analysis Area as based on information in the WMNF GIS database is available in the Project File. GIS indicated a total of 28,198 acres of lynx habitat occur in this LAU. Field reviews indicate this may be higher than is actually on the ground. The following determinations are based on the field information collected.

Only Conservation Measures relating to programmatic planning and vegetation management would be applicable to the Proposed Action. Other Conservation Measures were not reviewed for this Proposed Action. A complete list of Conservation Measures is available in "Canada Lynx Assessment Unit and Habitat Mapping - White Mountain National Forest -DRAFT".

Programmatic Standards: If more than 30% of lynx habitat in an LAU is unsuitable, no further reduction of suitable conditions may occur. For unsuitable or non-habitat, no restrictions apply. Where less than 10% of the habitat is considered suitable for denning, delay management actions that would delay achievement of this objective.

LAU 6 is currently 83% suitable lynx habitat according to the GIS database and 20% is suitable for denning. Most of the land within the Iron Maple Project area is classed as non-lynx habitat.

Vegetation Management Standards

Does project reduce suitable lynx habitat?

NO –Removal of trees within non-lynx habitat on unsuitable lynx habitat would not reduce the amount of suitable lynx habitat in this LAU. (See "Canada Lynx assessment Unit and Habitat Mapping _ White Mountain National Forest – DRAFT).

Does project maintain at least 10% of the LAU in denning habitat?

YES –The percentage of lynx denning habitat in LAU 6 is 20%. This exceeds the minimum

of 10% denning habitat that should be maintained in each LAU. In addition the Iron Maple project site has no denning habitat to potentially impact.

Does project include salvage harvest?

NO –

If salvage, are all salvage areas less than 5 acres retained?

NA -

Is at least 10% of the affected area retained from salvage harvest?

NA –

Does pre-commercial thinning maintain or enhance snowshoe hare habitat?

N/A

Do regeneration harvests promote snowshoe hare habitat?

The clearcuts are in northern hardwood stands but some are relatively close to areas of softwood so these could provide snowshoe hare foraging habitat. Harvest in Units 4, 5, 6, and 11 could promote softwood regeneration that would benefit snowshoe hare.

Do improvement cuts retain and/or recruit conifer understory and/or coarse woody debris?

YES.

Determination

Based on this review, it is my determination that **all Alternatives are consistent with the Conservation Measures outlined in the Canada Lynx Conservation Assessment and Strategy.**

REGIONAL FORESTER'S LISTED SPECIES

EASTERN SMALL-FOOTED MYOTIS (*Myotis lebeii*)

Very little information is available about eastern small-footed myotis in New England. This species hibernates in caves and abandoned mines during the winter (DeGraaf and Yamasaki 2001, Godin 1977, Kiser et al. 2001). This species tolerates colder temperatures than other bat species in New England, entering hibernation in late November and leaving in early April (DeGraaf and Yamasaki 2001).

Small maternity colonies or individuals may roost in rocky crevices on cliffs, in building, or under rocks (DeGraaf and Yamasaki 2001, Kiser et al. 1995:65, Hitchcock 1955).

Information for the more common bat species on the Forest indicates that wetlands and trail corridors provide important foraging habitat. Areas of regeneration and small forest openings also provide foraging habitat for bats (DeGraaf and Yamasaki 2001, Krusic et al. 1996, Sasse 1995). It is assumed that eastern small-footed myotis prefer foraging habitat similar to the common bats species of the area: over open, still water and the edge habitat of forest openings (Sasse 1995, Krusic et al. 1996, DeGraaf and Yamasaki 2001).

Occupied and Unoccupied Habitats

There is a documented capture of one *M. leibii* south of the project area in the Bartlett Experimental Forest (Yamasaki, personal communication 2003). Of approximately 360 bats caught in mist nets and harp traps on the Forest during the summers 1992-94, none were suspected of being a small-footed myotis (Krusic 1995, Krusic et al. 1996, Sasse 1995). The WMNF contracted bat surveys to occur at 8 locations across the Forest the summer of 2002. No small-footed myotis were caught during these surveys (Chenger 2002). A winter hibernacula used by an individual of this species occurs over 20 miles from the proposed project area. Banding returns indicated this species travels relatively short distances (less than 25 miles) between summer habitats and winter hibernacula (DaGraaf and Yamasaki 2001). The analysis area contains rock ledges, a favored roost site, surrounded by mature northern hardwoods with scattered snags.

Direct and Indirect Effects

NO-ACTION ALTERNATIVE

There would be no direct or indirect effects on eastern small-footed myotis from the No Action Alternative.

Direct and indirect effects from the ACTION ALTERNATIVES:

It will be assumed small-footed myotis has similar habits to the common bat species in NH due to the dearth of information on the foraging and roosting habits of this species. Recent literature indicates roosting occurs in rock crevasses and not in trees, though it doesn't dismiss a tree roost as a possibility.

The rocky cliffs and ledges on the south slope of Iron Mountain would not be impacted by this project as they are outside the project area and over ½ mile from the nearest harvest unit. Direct effects to eastern small-footed myotis could occur from all Action Alternatives for units with proposed summer (June, July, August) or fall (September to December) harvest. It is unlikely that winter harvesting (December through March) would directly affect eastern small-footed myotis in northern New Hampshire. While eastern small-footed myotis may leave hibernation as early as March, harvest is usually stopped until snowmelt is done and soils have dried, typically sometime in May or June. Tree removal in the summer or fall could displace or result in direct mortality of roosting bats or cause abandonment of traditional roost sites. The potential for this effect is minimal as the literature indicates that eastern small-footed myotis prefers to roost in rocky outcrops or buildings. It is unclear if this specie roosts in trees or not.

Indirect effects would be a temporary increase in assumed foraging habitat by increasing openings through clearcuts, seed tree cuts, group cuts or delayed shelterwood cuts.

Cumulative Effects

The most suitable habitat in the area, the rocky cliffs and ledges near Iron Mountain, would not be affected by this project and no future projects are planned near that habitat.

The project area is composed primarily of mature hardwood stands. Over the last fifteen to twenty years, six timber sales (Cave Mt., Stairs Mt., Rocky Branch Roadside, Rocky Branch II, Back-A-Pickering and Back-A-Pickering II) have occurred within the analysis area. In addition, logging recently occurred on

private land just outside the analysis area along Iron Mountain Road. While this project adds to the cumulative effects of past timber harvests on forested habitat, it is unknown if this is a cumulative effect on small-footed myotis as it is not definitive that they utilize forested habitat. The low likelihood of this species occurring on the White Mountain National Forest as well as the small percentage of habitat affected by removal of trees during the summer and early fall minimize the potential for this effect.

No other projects are planned in the near future within the vicinity of this project. Small wetlands in the area should continue to provide foraging habitat for forest bats

Forest Plan Standards and Guidelines (USFS 1986a) that provide a diversity of habitat conditions (Forest Plan-III-13), reserve large wildlife trees in managed units, retain standing dead trees where possible (Forest Plan-III-15), and maintain riparian habitats (Forest Plan-III-18) should ensure that adequate habitat is maintained for eastern small-footed myotis. Additionally implementing the Terms and Conditions outlined for Indiana bat in the Biological Opinion (USFWS 2000) as incorporated in the Forest Plan amendment (USFS 2001), should also maintain habitat components needed by eastern small-footed myotis.

Effects Determination

In view of all the information available, it is my determination that the **No Action Alternative would have no impact and that the Action Alternative may impact individual eastern small-footed myotis but would not likely cause a trend toward federal listing or loss of viability.**

NORTHERN BOG LEMMING (*Synaptomys borealis sphagnicola*)

Northern bog lemmings are extremely rare in New England and the WMNF lies on the southern edge of this species' range. Of the few specimens collected in the eastern United States, two were collected in the alpine habitats (Clough and Albright 1987). They have been found throughout its range at elevations from 1312 to 4510 feet in mossy spruce woods, low elevations spruce-fir, hemlock and beech forests, sphagnum bogs, damp weedy meadows, and alpine sedge meadows (Clough and Albright 1987, DeGraaf and Yamasaki, 2001).

Little is known about its behavior. They may construct crisscrossing runways above ground or may burrow just beneath the leaf mold. They may be found in colonies and in the burrows of other small mammals. They forage on grasses, sedges, seeds and fungi. (DeGraaf and Yamasaki, 2001).

Northern bog lemmings appear to prefer sedge meadows and sphagnum bogs. They also inhabit weedy fields, riparian areas, mossy spruce woods, and hemlock and beech forests. In upland habitats they prefer thick understory and ground cover (DeGraaf and Yamasaki, 2001; DeGraaf et al 1992; Godin 1977). This species uses burrows above and below the ground and may construct nests up to several inches below the ground. They are vegetarians feeding primarily on grasses, sedges, seeds, and fungi.

Occupied and Unoccupied Habitats

No northern bog lemmings have been documented in or near the analysis area.

Sampling of small mammal populations was conducted from 1992 to 1997 (with directive searches for northern bog lemmings from 1995 through 1997) on the WMNF. A directed search for this species on the

White Mountain National Forest focused on 115A and 6E ecological land types (ELT) as well as boggy and mucky areas. Softwood habitat generally characterizes these ELT's. One individual was detected during these surveys in a low elevation mixedwood area near a stream (Yamasaki, unpublished data).

Northern bog lemmings have not been documented in or near the analysis area. Existing vegetative cover within the analysis area includes riparian areas along the Rocky Branch and Otis Brook. These areas are considered potential habitat for this species, however probability of occurrence is assumed to be very low.

Direct and Indirect Effects

The No Action Alternative would have no direct or indirect effect on northern bog lemming.

All Action Alternatives could have direct effects on the northern bog lemming. Direct effects may occur when heavy machinery compacts snow or soil potentially disturbing or displacing individuals. The potential for displacing individuals is minimal under all Action Alternatives, as the wetter portions of all units would be deferred from treatment. Additionally skid trails will be designated to avoid wet areas.

There would be minimal indirect effects on the northern bog lemming under any of the Action Alternatives as potential habitat where northern bog lemmings may occur would still be suitable upon completion of harvesting operations.

Cumulative Effects

Over the last fifteen to twenty years, six timber sales (Cave Mt., Stairs Mt., Rocky Branch Roadside, Rocky Branch II, Back-A-Pickering, and Back-A-Pickering II) have occurred in this area. In addition, logging recently occurred on private land just outside the analysis area along Iron Mountain Road. Past activities may have benefited or displaced northern bog lemmings if they inhabited the area. It is assumed implementation of this project would impact northern bog lemmings in a similar fashion. Currently no other projects are planned in the near future within the analysis area and it is unknown if projects are planned on private land.

Forest Plan Standards and Guidelines maintain a diversity of habitats (Forest Plan III, 12-13) and protect riparian habitats (Forest Plan III-19). It is expected these would minimize negative effects and provide adequate habitat for northern bog lemming.

Effects Determination

Based on review of available information, it is my determination that the **No Action Alternative would have no impact and that all Action Alternatives may impact individual northern bog lemmings but would not likely cause a trend toward federal listing or loss of viability.**

REFERENCES AND LITERATURE CITED

- Bat Conservation International. 1997. Forest and Tree Use by U.S. Bats. www.batcon.org/treebats.html. Visited March 25, 2003.
- Bechtel, D. A. 1999. Ecological Inventories of 1998 Project Areas in the White Mountain National Forest NH. Department of Resources and Economic Development. Concord, NH. pgs 29a-31.
- Best, T.L. and J.B. Jennings. 1997. *Myotis leibii* in Mammalian Species. No. 547, pp. 1-6.
- Brady, J.T.; LaVal, R.K.; Kunz, T.H.; Tuttle, M.D.; Wilson, D.E.; Clawson, R.L. 1983. Recovery Plan for the Indiana Bat. Washington, D.C.; USDI Fish and Wildlife Service. 23 p. + 6 appendices.
- Brocke, R.H., J.L. Belant, and K.A. Gustafson. 1993. Lynx population and habitat survey in the White Mountain National Forest, New Hampshire. State University of New York, College of Environmental Science and Forestry. 93pp. (unpublished report to White Mountain National Forest).
- Chenger, John. 2002. Summer Survey for New Hampshire Woodland Bats. Bat Conservation and Management, Carlisle, PA. 47 pp.
- Clough, C.C.; Albright, J.J. 1987. Occurrence of the northern bog lemming, *Synaptomis borealis*, in the northeastern United States. Canadian Field-Naturalist. 101:611-613.
- DeGraaf, R. M., M. Yamasaki. 2001. New England Wildlife: Habitat Natural History and Distribution. University Press of New England, Hanover, NH. 482 pp.
- _____, M. Yamasaki, W. B. Leak, and J. W. Lanier. 1992. New England Wildlife: Management of Forested Habitats. USDA Northeastern Forest Experiment Station Gen. Tech. Rep. NE-144. 271pp.
- Department of Resources and Economic Development. 1992. An Ecological Inventory of the White Mountain National Forest. Concord. NH. pgs 54-55a.
- Endangered Species Act. 1972.
- Engstrom, B. E. and D. D. Sperduto. 1994. An ecological inventory of the White Mountain National Forest. Department of Resources and Economic Development. Concord, NH. pgs 52-53a.
- Forest Service Manual; 2672.42. Biological Evaluations.
- Foss C. R. 1994. Atlas of breeding birds in New Hampshire. Audubon Society of New Hampshire. Arcadia, an imprint of the Chalford Publishing House, Dover, NH. 414pp.
- Gardner, J.E.; Garner, J.D.; Hofmann, J. 1991. Summer roost selection and roosting behavior of *Myotis sodalis* (Indiana bat) in Illinois. Champaign, IL: Illinois Natural History Survey. Unpublished.
- Godin, A. J. 1977. Wild mammals of New England. The John Hopkins University Press, Baltimore and London. 304pp.
- Harris, S. K., J. H. Langenheim, F. L. Steele, and M. Underhill. 1964. AMC Field Guide to Mountain Flowers of New England. Appalachian Mountain Club. 147pp.
- Harrison, D. J. and T. G. Chapin. 1997. An assessment of potential habitat for eastern timber wolves in the northeastern United States and connectivity with occupied habitats in southeastern Canada. Prepared for the Wildlife Conservation Society by University of Maine, Orono. 12pp.
- Harvey, Michael J. 1992. Bats of the Eastern United States. Tennessee Technological Univ.
- Hickenbottom, J. R., B. Summerfield, J. Amdahl, G. Hale, M. Hilliar, L. Jackson, D. Pervade, and J. Rupee. 1999. Biological assessment of the effects of National Forest Land and Resource Management Plans and Bureau of Land Management Plans on

Canada lynx. United States Department of Agriculture Forest Service.

Hitchcock, H.B. 1955. A summer colony of the least bat, *Myotis subulatus leibii* (Audubon and Bachman). *Can. Field-Nat.* 69:31.

Humphrey, S.R.; Richter, A.R.; Cope, J.B. 1977. Summer Habitat and Ecology of the Endangered Indiana Bat, *Myotis sodalis*. *Journal of Mammalogy*. Vol. 58, No.3.

Kingman, D.B. 1986. A search for the evidence of lynx (*Lynx canadensis*) in the White Mountains of New Hampshire. 4pp.mimeo.

Kiser, J. S., R. R. Kiser, V. Brack, Jr., and E. R. Britzke. 2001. A survey for eastern forest bats on Green Mountain and Finger Lakes National Forests with emphasis on the federally endangered Indiana bat (*Myotis sodalis*). Environmental Solutions and Innovations, LLC. Cincinnati, Ohio. 60pp.

Krusic, R. A. 1995. Habitat use and identification of bats in the White Mountain National Forest. M.S. Thesis, University of New Hampshire, Durham. 86pp.

Krusic, R. A.; Yamasaki, M.; Neefus, C.D.; Pekin, P.J. 1996. Bat habitat use in White Mountain National Forest. *J. Wildl. Manage.* 60(3):625-631.

Kurta, A.; King, D.; Teramino, J.A.; Stribley, J.M.; Williams, K.J. 1993. Summer roosts of the endangered Indiana Bat (*Myotis sodalis*) on the northern edge of its range. *Am. Midl. Nat.* 129:132-138.

Kurta, A.; Williams, K.J.; Mies, R. 1996. Ecological, behavioral, and thermal observations of a peripheral population of Indiana bats (*Myotis sodalis*). Pgs. 102-117. In: Barclay, R.M.R.; Brigham, R.M. (editors). *Bats and forests symposium*, Oct. 19-21, 1995, Victoria, British Columbia, Canada. Research Branch, British Columbia Ministry of Forestry, Victoria, B.C. Work. Pap. 23/1996.

Litvaitis, J.A., D. Kingman, Jr., J.Lanier, and E. Orff. 1987. Status of lynx in New Hampshire in 1995. New Hampshire Audubon Society.

McFarland, K. P. 2002. DRAFT. Conservation assessment of two endemic butterflies (White Mountain Butterfly, *Oneis melissa semidea* and White Mountain Fritillary (*Boloria montinus montinus*) in the Presidential Range Alpine Zone, White Mountains, New Hampshire. Vermont Institute of Natural Science. 11pp. plus Appendices.

Mladenoff, D. J. and T. A. Sickley. 1998. Assessing potential gray wolf restoration in the northeastern United States: a spatial prediction of favorable habitat and potential population levels. *J. Wildl. Manage.* 62(1):1-10.

Newcomb, L. 1977. Newcomb's wildflower guide. Little, Brown, and Company. Boston. 490pp.

New Hampshire Natural Heritage Inventory. 2000. Rare and imperiled plants of New Hampshire. DRED – Division of Forest and Lands, Concord, NH.

Pavulaan, H., Board of Director's of International Lepidoptera Society and editor of Virginia Butterfly Bulletin. 2000. Personal communication.

Ramstetter, J.M. 2001. Conservation Assessment of *Triphora trianthophora*. New England Plant Conservation Program for New England Wildflower Society, Framingham, MA. 66pp.

Rimmer, C. C., McFarland, K. P., and J. D. Lambert. 2001. Bicknell's thrush (*Catharus bicknellii*) Conservation Assessment. Vermont Institute of Natural Science, Woodstock, VT. 21 pp. plus Tables and Appendix.

Romme, R.C., K. Tyrell, and V. Brack, Jr. 1995. Literature summary and habitat suitability index model: components of summer habitat for the Indiana Bat, *Myotis sodalis*. Federal Aid Project E1-7, Indiana Dept. of Nat. Res., Bloomington, IN. 172pp.

Rowse, L. A. 1998. Biologist WMNF. Personal communication.

- Ruediger, B., J. Claar, S. Gniadek, B. Holt, L. Lewis, S. Mighton, B. Naney, G. Patton, T. Rinaldi, J. Trick, A. Vandehey, F. Wahl, N. Warren, D. Wenger, and A. Williamson. 2000. Canada Lynx Conservation Assessment and Strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, MT. 142pp.
- Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, G. M. Koehler, C. J. Krebs, K. S. McKelvey, and J. R. Squires. 2000. Ecology and conservation of lynx in the United States. USDA Forest Service, Rocky Mountain Research Station Gen. Tech. Rep. RMRS-GTR-30WWW. 473pp plus Appendix.
- Sasse, D.B. 1995. Summer roosting ecology of cavity-dwelling bats in the White Mountain National Forest. Durham, NH: Univ. of NH. MS thesis. 65 p.
- Seymour, F. C. 1993. The Flora of New England. The Charles E. Tuttle Company; privately printed. 596pp.
- Sperduto, D. D. and B. E. Engstrom. 1993. An ecological inventory of the White Mountain National Forest. Department of Resources and Economic Development. Concord, NH. pgs 77-78.
- Sperduto, D. D. and B. E. Engstrom. 1995. An ecological inventory of the White Mountain National Forest. Fourth Year Summary Report. Department of Resources and Economic Development. Concord, NH. 346pp.
- Sperduto, D. D. 1997. A guide to the Natural Communities of New Hampshire, Review Draft – Parts I, Parts II and Upland Forest Portion of Part III. New Hampshire Natural Heritage Inventory. Department of resources and Economic Development, Concord, NH.
- Sperduto, M. B. 1988. Use of geographic information system (GIS) to predict potential habitat for *Isotria medeoloides* (Pursh) RAF. in New Hampshire and Maine. M. S. Thesis. University of New Hampshire, Durham. 106pp.
- Storks, I. M. and G. E. Crow. 1979. Endangered, threatened, and rare plants of the White Mountain National Forest, New Hampshire. University of New Hampshire. Durham, NH. 186pp.
- USDA Forest Service. 1978. Affects of Fire on Fauna. Gen. Tech. Report WO6. Denver, CO.
- USDA Forest Service. 1986a. Land and Resource Management Plan, White Mountain National Forest (and amendments). Laconia, NH.
- _____. 1986b. Final Environmental Impact Statement Land and Resource Management Plan White Mountain National Forest. Laconia, NH. 93pp. plus appendices.
- USFS. 1993. White Mountain National Forest Monitoring Report. Laconia, NH 112pp.
- USFS. 1994. White Mountain National Forest Monitoring Report. Laconia, NH 36pp.
- USFS. 1996. White Mountain National Forest. 1996 Annual Report, Ten Year Monitoring Summary. 63pp.
- USFS. 1998. White Mountain National Forest Monitoring Report. Laconia, NH 36pp
- USFS. 1999a. Biological Assessment for threatened and endangered species on the White Mountain National Forest in the States of Maine and New Hampshire. USDA Forest Service, Eastern Region, Milwaukee, WI.
- USFS. 1999b. White Mountain National Forest Monitoring Report. Laconia, NH 45pp
- USFS. 2000. White Mountain National Forest Monitoring Report. Laconia, NH 61pp
- USFS. 2000a. Canada Lynx Conservation Strategy. USDA Forest Service, Region 1. Montana.
- USFS. 2000b. Eastern regional forester's sensitive species list and eastern region proposed threatened, or endangered taxa. USFS Endangered Species Program, Region 9. Milwaukee, WI.

USFS. 2000c. Canada lynx conservation agreement. USFS agreement #00-MU-11015600-013. 12pp.

USFS. 2001. White Mountain National Forest Monitoring Report (DRAFT). Laconia, NH.

USFS. Various years. White Mountain National Forest survey and monitoring data. Unpublished.

United States Department of Interior Fish and Wildlife Service (USFWS). 1982. Eastern Cougar Recovery Plan. Denver Wildlife Research Center, U. S. Fish and Wildlife Service. 17pp.

USFWS. 1983. Northern states bald eagle recovery plan. 66pp plus Appendices.

USFWS. 1991a. Robbins' cinquefoil (*Potentilla robbinsiana*) Recovery Plan, First Update. U.S. Fish and Wildlife Service, Newton Corner, MA. 21pp.

USFWS. 1991b. Peregrine Falcon (*Falco peregrinus*) Eastern Population Recovery Plan - 1991 Update. Newton Corner, MA. 28pp.

USFWS. 1992a. Recovery Plan for the Eastern timber wolf. U. S. Fish and Wildlife Service, Twin Cites, MN. 73pp.

USFWS. 1992b. Small-whorled pogonia (*Isotria medeoloides*) Recovery Plan, First Revision. U. S. Fish and Wildlife Service, Newton Corner, MA. 59pp.

USFWS. 1996. Technical draft Indiana bat (*Myotis sodalis*) recovery plan. Minneapolis, MN. 37pp. plus Appendices.

USFWS. 2000. Conference report and Biological Opinion on the Effects of the Land and Resource Management Plan and other Activities on threatened and endangered species in the White Mountain National Forest and Incidental Take Statement. USDI Fish and Wildlife Service.

von Oettingen, Susi. Personal communication. 2001,2002. Endangered species specialist. U.S. Fish and Wildlife Service. Northeast Region. Concord, NH.

Yamasaki, M. 1996, 1998, 2003. Forest Service Research Biologist. Personal communication, unpublished data. Durham, NH.

Table 2

Biological Evaluation:

Pre-field review of federally endangered, threatened, and proposed species and Region 9 sensitive species for **Iron Maple Timber Sale**, Town of Bartlett, Carroll County, New Hampshire.

January 2003

Species	Habitat Requirements	Sightings (Present or Historical) within the Analysis Area	Suitable Habitat within the Analysis Area?	Documented or Suspected in Analysis Area?
FEDERALLY THREATENED AND ENDANGERED SPECIES				
**Eastern Gray Wolf <i>Canis lupus</i>	Large expanses of forested habitat, with large prey base.	NO	YES. Forested habitat with moose and deer.	Extirpated
**Eastern Cougar <i>Felis concolor cougar</i>	Large expanses of forested habitat, which has adequate populations of deer.	NO	YES. Forested habitat with moose and deer.	Extirpated
**Canada lynx <i>Felis lynx canadensis</i>	Extensive forest interiors. Utilizes shrub/swamps and aspen, paper birch, hardwoods, red maple and spruce/fir regeneration. Other habitat used includes openings, bogs, caves, ledges, and older age classes of aspen, paper birch, hardwoods and softwoods. Associated with snowshoe hare.	NO	YES. The analysis area contains potential suitable and unsuitable lynx habitat based on WMNF interpretation of habitat guidelines defined in Lynx Conservation Assessment and Strategy (USFS 2000a) YES	Extirpated
Small-whorled Pogonia <i>Isotria medeoloides</i>	Open woods with an oak component. Less than 1500' elevation. Enriched hardpan soils or presence of ledge.	NO	Oak present. Elevation less than 1500' and south-facing slopes. Areas within analysis area show potential habitat using method developed by Sperduto 1988.	SUSPECT
Indiana Bat <i>Myotis sodalis</i>	Roost primarily under exfoliating bark in upland woodlots and riparian forest. Prefer dead or nearly dead trees. Will alter roost sites often. Forages in the foliage of upper canopy trees along rivers, lakes and open areas.	NO	Adjacent forests contain suitable roost trees	SUSPECT
Bald Eagle <i>Haliaeetus leucocephalus</i>	Large bodies of water with fish.	NO	No large bodies of water	NO

Iron Maple II Timber Sale

Species	Habitat Requirements	Sightings (Present or Historical) within the Analysis Area	Suitable Habitat within the Analysis Area?	Documented or Suspected in Analysis Area?
REGIONAL FORESTER'S SENSITIVE SPECIES				
MAMMALS				
Eastern Small-footed Bat <i>Myotis leibii</i>	Requires caves and old buildings for roost sites. May roost in rock crevasses.	NO	Iron Mt. Mine and rock ledges present within analysis area.	SUSPECT
Northern Bog Lemming <i>Synaptomys borealis sphagnicola</i>	Prefers sedge meadows and bogs. Other habitats include riparian areas, openings, krummholz, and softwoods. Requires moist to wet loose soils. Prefers dense herbaceous or mossy understory. Uses burrows.	NO	Riparian areas and softwoods present.	SUSPECT
BIRDS				
Bicknell's Thrush <i>Catharus bicknelli</i>	Spruce, fir, birch, and krummholz communities of high elevations.	NO	Not in high elevation area.	NO
American Peregrine Falcon <i>Falco peregrinus anatum</i>	Requires cliff faces for nesting. Feeds on birds. Forages in open areas.	NO	Cliffs present in analysis area and area could be used for foraging.	SUSPECT
Common Loon <i>Gavia immer</i>	Lakes and ponds at least ¼ mile long. Nests on water's edge. Require adequate prey base of small fish, amphibians to feed young.	NO	No large lakes or ponds	NO
**Migrant Loggerhead Shrike <i>Lanius ludovicianus migrans</i>	Grasslands with scattered trees and shrubs.	NO	No. Densely forested habitat	Extirpated
REPTILES				
Wood Turtle <i>Clemmys insculpta</i>	Riparian areas of slower moving streams. Wooded or heavily vegetated stream banks as well as fields and meadows used for foraging. Hibernates in stream bottoms or muddy banks. Sandy and gravelly areas used for nesting sites.	NO	Streams too rocky and fast moving with no muddy, sandy or gravelly areas for nesting.	NO
**Timber Rattlesnake <i>Crotalus horridus</i>	Rocky south-facing outcrops or ledges.	NO	South-facing rocky outcrops and ledges present.	Extirpated
INSECTS				
White Mountain Fritillary <i>Boloria chariclea montina</i>	Alpine. Inhabits lush, moist areas near sheltered spots, wet springs, and rocky outcrops above 4500'. Alpine goldenrod common food plant Larval host unknown may be blueberry or willow.	NO	Not alpine	NO
White Mountain Butterfly <i>Oenesis melissa semidea</i>	Alpine. Prefers sedge meadows. Adult host plant unknown. Larva feed on Bigelow's Sedge.	NO	Not alpine	NO

Iron Maple II Timber Sale

Species	Habitat Requirements	Sightings (Present or Historical) within the Analysis Area	Suitable Habitat within the Analysis Area?	Documented or Suspected in Analysis Area?
PLANTS				
Arnica <i>Arnica lanceolata</i>	Alpine ravines, damp banks and rock ledges. At low elevations on rocky river banks, gravel bars, beaches, and alluvial flats of rivers and streams at low elevations.	NO	Not alpine, no ledges but rocky river banks, gravel bars.	SUSPECT
Dwarf White Birch <i>Betula minor</i>	Bogs and wet, rocky alpine slopes, summits and gullies. Acidic rocky barrens and peaks.	NO	Not alpine, no bogs or rocky slopes.	NO
Pond Reed Bent-grass <i>Calamagrostis lacustris</i>	Alpine and subalpine areas of wet rocky or gravelly sites. Wet ledges. Also found along riversides.	NO	Not alpine, but wet ledges and streams do not possess suitable habitat.	NO
Alpine Bitter Cress <i>Cardamine bellidifolia</i>	Cold ravines or on wet mossy rocks in the alpine area.	NO	Not alpine	NO
Bailey's Sedge <i>Carex baileyi</i>	Wetland species of fens, swampy woods and meadows of calcareous soils. Ditches. Disturbed openings on calcareous soils.	NO	Ditches exist along all roads but no calcareous soils or swampy woods in project area..	NO
Piled-up Sedge <i>Carex cumulata</i>	Open ledges, dry sandy soils; open oak forests or hardwood talus; clearings; burned oak-pine rocky summit woodlands.	NO	Open ledges and oak forests	SUSPECT
Weigand's Sedge <i>Carex weigandii</i>	Boggy or peaty soils, boreal bogs; acidic soils of drier, shrubby, sometimes disturbed, margins of acidic sphagnum bogs or poor fens.	NO	No boggy soils	NO
Squirrel Corn <i>Dicentra canadensis</i>	Rich, moist, deciduous woods	NO	Enriched habitat not present	NO
Goldie's Woodfern <i>Dryopteris goldiana</i>	Rich, damp woods of calcareous soils. Rich mesic forests.	NO	Enriched habitat not present	NO
Oakes' Eyebright <i>Euphrasia oakesii</i>	Alpine. Exposed gravelly slopes or ledges or open ledgy areas.	NO	Not alpine	NO
Proliferous Red Fescue <i>Festuca rubra ssp arctica = var prolifera</i>	Alpine. Rocky or peaty soils.	NO	Not alpine	NO
Northern Comandra <i>Geocaulon lividum</i>	Peat bogs at high altitudes. Damp humus in spruce-fir woods at med to high elevation (fir waves);	NO	Analysis area not high enough in elevation	NO
Mountain Avens <i>Geum peckii</i>	Moist alpine areas. Snowbank, wet meadow, streamside communities in the alpine. Occurs rarely at low elevation sites, in rocky streams.	NO	Not alpine	NO
Butternut <i>Juglans cineria</i>	Rich, moist, alluvial soils and dry, rocky hillsides with limestone. Old farmsteads.	NO	Enriched habitat not present; old farmsteads not present.	NO
Auricled Twayblade <i>Listera auriculata</i>	Temporarily flooded and seasonally ice-scoured riverbanks with calcareous soils. Stream banks, mossy woods, alder thickets, boggy alluvial woods, cedar swamps, gravel riverbank, and lake and pond shores	NO	No calcareous soils. Streambanks not mossy, no alder thickets,	NO
Broad-leaved Twayblade <i>Listera convallarioides</i>	Wet woods, usually in deep shade; peaty glades, spruce/fir woods; thickets, nutrient poor mossy-forested seeps.	NO	No wet woods or peaty glades.	NO
Heartleaf Twayblade <i>Listera cordata</i>	Wet cold, woods and sphagnum bogs; sub-alpine scrub; bases of wet, seepy ledges, outcrops/cliffs, spruce/fir woods on lime.	NO	No sphagnum bogs, seepy ledges.	NO

Iron Maple II Timber Sale

Species	Habitat Requirements	Sightings (Present or Historical) within the Analysis Area	Suitable Habitat within the Analysis Area?	Documented or Suspected in Analysis Area?
Alpine Cudweed <i>Omalotheca supina</i>	Gravelly slopes and ravines at high altitudes; exposed alpine areas and snowbank communities.	NO	Not alpine.	NO
Canada Mountain Ricegrass <i>Oryzopsis canadensis</i>	Dry, rocky openings just below treeline and into krummholz zone; sandy deciduous woodlands; early successional plant communities; along sandy roadsides, and on open, sparsely brushy ground.	NO	No rocky openings, roadsides and adjacent woodlands not sandy.	NO
Mountain Sweet-Cicely <i>Osmorhiza berteroi</i>	Rich, moist, deciduous, shaded woods. Recently found on Bog Dam road in ditch.	NO	Enriched habitat not present	NO
American Ginseng <i>Panax quinquefolius</i>	Moist soils of almost any type. Often cool, rich, rocky, deciduous, woods with shrubby underbrush. Semi-mesic forests w/ rocky, thick humus of colluvial soils.	NO	Enriched habitat not present	NO
White Mountain Silverling <i>Paronychia argyrocoma (ME) Var albimontana (NH)</i>	Mid-elevation, bare rocky summits, ledges, and cliffs; sand/gravel barrens of Saco River between Bartlett and Fryeberg.	NO	Rocky ledges and Rocky Branch has gravel barrens.	SUSPECT
Sweet Coltsfoot <i>Petasites frigidus var palmatus</i>	Swampy woods, meadows with calcareous soils. White cedar swamps.	NO	No cedar swamps or wet meadows	NO
Wavy Bluegrass <i>Poa fernaldiana</i>	Alpine gardens in Presidential and Franconia Mts.	NO	Not alpine	NO
Boott's Rattlesnake Root <i>Prenanthes boottii</i>	Variety of alpine habitats, moist tundra, steep cirque ledges and crests, and disturbed alpine sites such as trailsides and hut areas	NO	Not alpine	NO
Pink Wintergreen <i>Pyrola asarifolia</i>	Rich, moist woods and bogs of calcareous soils. Moist alluvial soil of lower river terrace forests. Spruce/fir forests. Prefers areas around wetlands/	NO	Enriched habitat not present	NO
Robbin's Cinquefoil <i>Potentilla robbinsiana</i>	Alpine zone in Presidential Range of WMNF.	NO	Not alpine	NO
Livelong Saxifrage <i>Saxifraga paniculata</i>	Alpine. Exposed calcareous, gravels and rocks; grows on limy seepy open cliffs of the calcareous open rocks/cliffs.	NO	Not alpine and no limy, seepy, open cliffs.	NO
Moss Champion <i>Silene acaulis var exscapa</i>	Moist, alpine meadows. Gravelly barrens.	NO	Not alpine	NO
Nodding Pogonia <i>Triphora trianthophora</i>	Mid-elevation beech hardwoods usually on south-facing slopes. Deep leaf litter with humus.	NO	South facing slopes at mid elevation with some beech.	SUSPECT
Boreal Blueberry <i>Vaccinium boreale</i>	Alpine bogs, meadows of Presidential and Franconia Mts. Exposed gravelly or rocky sites.	NO	Not alpine	NO

NA: Not Applicable

** Considered Extirpated from the White Mountain National Forest per US Fish and Wildlife Service.