

Biological Assessment for the Clara Project EA

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1.0 Introduction

This Biological Assessment (BA) documents the potential effects on federally proposed, candidate, threatened or endangered species and designated critical habitat that could result from the proposed vegetation management project and associated activities as documented in the Clara Project EA. This BA tiers to the Programmatic Biological Assessment for the revision of the Forest Plan (USDA Forest Service 2004, pp. 6-7) and provides more specific information on site-specific effects of the project to threatened and endangered species.

This BA was prepared in compliance with the requirements of Forest Service Manual Directives sections 2670.31, 2670.5(3), and 2672.4, the Endangered Species Act of 1973 as amended, and the National Forest Management Act of 1976.

Information provided by the USDI Fish and Wildlife Service (USDI FWS 2008 Letter from Field Supervisor Tony Sullins, October 10, 2008) confirms the species and critical habitat that should be considered for projects conducted on the Superior National Forest:

- Canada lynx (*Lynx Canadensis*) (threatened)
- Canada lynx critical habitat (proposed)
- Gray wolf (*Canis lupis*) (threatened)
- Gray wolf critical habitat

2.0 Consultation with USDI Fish and Wildlife Service

The Forest Service has initiated consultation with the Fish and Wildlife Service seeking concurrence with the determination of effects in this BA, which concludes that the proposed action (Alternative 2) may affect, but is not likely to adversely affect Canada lynx or gray wolf.

Consultation specific to the Clara Project is documented in the project file. It includes emails, telephone calls, and meeting notes between Sept. 15, 2008 and the submission of the BA to the FWS on December 11, 2008.

Lynx: In addition to consultation for Canada lynx and gray wolf requested for this project, programmatic consultation was recently undertaken for Forest Plan revision. The history of this consultation is documented in the Programmatic Biological Assessment for the revision of the forest plans (USDA Forest Service 2004, pp. 6-7). The relevance of program-level consultation to this project includes those agreements between the Forest Service and the Fish and Wildlife Service reached on defining elements of species' ecology and biology, risk factors and general effects, analysis parameters, monitoring, and management direction in the revised Forest Plan. The BA provides more specific information on how relevant information in the program-level BA is incorporated. Additionally, other factors relevant to this project not discussed in detail in program-level consultation will be discussed in detail in this BA.

Although the Forest Plan Programmatic BA consultation or conference on Canada lynx proposed or designated critical habitat occurred prior to proposed designation in February 2008 (USDI Fish and Wildlife Service 2008b), most of the risk factors to lynx that were analyzed also address the primary constituent elements of proposed critical habitat. In other words, the Programmatic BA addresses

proposed lynx critical habitat although it is not defined as such. See Section 4.0 below for additional information on recently proposed critical habitat.

Wolf: As a result of the increasing Minnesota population and the development of viable populations in neighboring states, the U.S. Fish and Wildlife Service recently removed Endangered Species Act protection for the Gray Wolf Western Great Lakes Distinct Population Segment. The final rule to delist this Distinct Population Segment was published in the Federal Register on February 8, 2007, and took effect on March 12, 2007. Since that time, the Forest Service has considered the wolf a sensitive species (Regional Forester's Sensitive Species List, USDA Forest Service, 2004C). They have been included in all Biological Evaluations written for management projects during that time with the objective of averting and mitigating adverse effects in order to maintain wolf viability and population health, and prevent relisting as a federally threatened or endangered species.

On September 30, 2008, Susan Oetker, FWS Biologist and liaison between the Superior NF and the Fish and Wildlife Service, sent a letter via e-mail stating, "...our delisting of the Great Lakes population of the grey wolf was vacated- in other words, it is still a threatened species" (Oetker, email, 2008). District Judge, Paul Friedman, U.S. District Court, District of Columbia, so ordered in response to a law suit brought by the Humane Society of the United States and several other animal protection groups against the delisting by the USDI Fish and Wildlife Service. The FWS must satisfy the court that it is not arbitrary and capricious in simultaneously designating the Great Lakes Segment as a distinct wolf population and removing it from the Federal List of Threatened Species (Friedman, 2008, Civil Action No. 07-0677 PLF). Until this is resolved, the wolf will again be included in Superior NF Biological Assessments for management projects.

3.0 The Proposed Action:

- **Location:** The Clara Project Area is located in Cook County about seven miles northwest of Lutsen, MN. Activities would be on National Forest System land within Township 61 North, Ranges 3 and 4 West, Township 62 North, Ranges 2, 3 and 4 West, and Township 63 North, Ranges 2 and 3 West. The Project Area encompasses about 48,000 acres, of which 35,000 acres are National Forest System land. The Vicinity Map (Clara EA, Chap. 1, Figure 1) shows the general location of the Project Area.

- **Ecological Setting:**

Table 1: Ecological Setting		
Landscape Ecosystem	NF Acres	% of Project Area (NF Lands)
Mesic Birch-Aspen-Spruce-Fir	25,161	71
Lowland Conifer – A, B, C	4,750	14
Jack Pine – Black Spruce	2,562	7
Non-Forest Land	1,612	5
Cedar	811	2
Black Ash LE, Dry Red and White Pine LE, Sugar Maple LE	295	<1
Total	35,191	

Table 2. Overview of species' Affected Environment: Lynx			
LAU	Gross Acres	Acres of LAU in Project Area	% of LAU in Project Area
LAU 35	35,225	28,606	81
LAU 36	34,721	18,961	55
<i>1. Data source: 2008 Superior NF Snapshot of LAU Existing Condition, Model run Sept. 21, 2008.</i>			

Table 3. Overview of species' Affected Environment: Gray Wolf		
Wolf	Percent of Project Area	
(Critical habitat) Zone 1	100	
(Critical habitat) Zone 2	0	
Zone 3	0	
Zone 4	0	

- **Other relevant setting features:** None
- **Proposed action summary**

The USDA Forest Service Superior National Forest proposes timber harvest, planting, prescribed burning and road system management associated with these actions as well as to provide for long-term federal, non-federal, and public access. The alternatives are described in Chapter 2 of The Clara EA. The proposed mitigations and design features are listed in Appendix E. The action alternatives include the following activities, in different amounts and locations:

- Timber harvest: A combination of clear cut with reserves, shelterwood seed cut with reserves, patch clearcut, seed tree cut and single tree selection.
- Reforestation: Includes natural regeneration, mechanical site prep, diversity planting, underplanting, interplanting and conversion planting (aspen to pine or spruce-fir)
- Road management: Includes opening two OML1 roads to ATVs only during the moose hunting season (Oct. 1-Oct. 22) totaling 1.8 miles. Roads would be posted closed to all motorized vehicles during the rest of the year. These roads would be permanently closed ten years from the decision date. All other temporary roads would be obliterated once reforestation activities are complete.
- Hazardous Fuel Reduction through understory removal and low intensity burns.

- **Purpose of the action:**

The purpose of the action is to implement the Forest Plan by moving the Project Area towards desired future conditions for vegetation and landscape ecosystem and is described in the Clara EA, Chapter 1.

- **Time frame of the action:**

Most management activities are expected to be implemented in the next 3-5 years with all harvest activities implemented by 2014 starting in late 2009. It is possible some activities may take longer to fully implement (some secondary treatments or reforestation activities and obliteration of their associated temp roads).

- **Project activities analyzed in program-level BA**

Table 4. Project activities.				
Proposed actions	Alt. 1	Alt. 2	Alt. 3	Addressed in Program-level BA?
Timber Harvest		X	X	Yes
Reforestation		X	X	Yes
Road Management		X	X	Yes
Hazardous Fuel reduction		X	X	Yes

4.0 Status of the Species: Canada Lynx

Ecology (see section 4.3 of program-level BA)

- Home range and dispersal:** Burdett *et al.* 2007 (pg. 461-465) reports that home ranges were significantly larger for males than females. Mean annual home range size was larger (267 km²) in males and smaller (21 km²) for females than previous lynx home range estimates by Mech (1980) in Minnesota. However the results for females represent the ranges of females with maternal dens or traveling with kittens ≤ 5 months old. Males had a tendency to increase their home ranges during breeding months while movements of females showed little change. Burdett also states that females generally exhibited less home-range overlap than males. He reports long-distance movement being more common in male lynx. These long distance movements are often attributed to behavioral response to low hare abundance, however, from examinations of body mass of wide-ranging lynx and metabolic requirements he suggests the larger home ranges of males may be a response to the distribution of resident females. His data suggest male lynx may adjust their breeding season movements up or down based on female density. While some male lynx traveled widely throughout January-March, one male had a March home range of <10 km² when it had access to ≥ 2 females in the area. Female movements showed little change during the breeding months. Females with kittens consistently occupied small home-ranges. This was most evident during the May-June denning season.

The sizes of the Superior National Forest's LAUs were based on the approximate size of lynx home ranges defined in the Lynx Conservation Assessment and Strategy (Ruedigger *et al.* 2000). Burdett *et al.* (2007) found that core area he defined for male and female lynx with GPS telemetry are generally within the spatial extent suggested by these LAU guidelines.

- Diet and Habitat:** A study by Hanson and Moen (2008, pg. i) of lynx diet based on scat analysis indicated that in northeastern Minnesota, as in all other parts of its range, snowshoe hare are the most important component of Canada lynx diet. Snowshoe hare remains were found in 76% of scats. If scats in which only white-tailed deer hair was found were eliminated, snowshoe hare remains were found in 97% of scats. (The belief is that most if not all deer hair found was from bait stations used during radio-telemetry project). Evidence was found of predation or scavenging on other species including deer, marten, grouse, and other birds. Also found was one instance of scavenging or possible predation on another lynx.

Hanson and Moen (2008, pg. 9) also found that snowshoe hare were the most important prey species from predation sites found while snow-tracking in Minnesota, 92% of predation events were snowshoe hare (Burdett 2008 in Hanson and Moen 2008). Even though snowshoe hare density in Minnesota is similar to density at low parts of the cycle in northern hare populations (McCann 2006 in Hanson and Moen 2008), the importance of alternate prey species in lynx diet has not increased relative to what has occurred in other lynx populations (Aubrey 2000 in Hanson and Moen 2008). The rarity with which evidence for killing other prey species with snow-tracking or scat analysis indicates that alternative prey would not be a significant component of lynx diets in winter (Hanson and Moen 2008).

Following 38 trails totaling 63.2 km from 6 (3 male, 3 female) GPS collared lynx Burdett (2008, pgs. 54-63, 102-108) reports lynx consistently selected against lowland conifer and selected for forest edges. Lynx did not use lowland-conifer forests for hunting or resting. This consistent

selection against lowland-conifer forest was unexpected because lowland-conifer forests have traditionally been considered good habitat for snowshoe hares in the northern Great Lakes states (Buehler and Keith 1982, Pietz and Tester 1983, Fuller and Heisey 1986 *in Burdett*). This suggests that general statements about the relative quality of lowland-conifer forest for hares and lynx can be misleading.

Most lowland-conifer forests in the Burdett study area were black spruce dominated wetlands on actively accumulating peat formations. Discrepancies with previous studies may result from hares using more diverse lowland-conifer with denser under stories containing cedar, tamarack, willow and alder or previous studies may have been conducted when hares were more abundant and using sub-optimal habitat.

Lynx increased their use of regenerating (10 -30 year old) and mixed forests when these forest types became more common. Lynx used upland-conifer and mixed forest and open areas in proportion to their availability. Burdett saw little response by lynx to upland conifer forest despite the previously reported association between coniferous forest and lynx and hares (Wolf 1980, Hoving *et al.* 2005 *in Burdett*). Lynx consistently selected for regenerating forests when hunting and resting, which Burdett suggests reflects the greater abundance of hares in these forests.

Most hare kills were short-distance chases that occurred during lynx movements and few kills originated from hunting beds. The increased use of hunting beds in mixed forests may indicate lynx used this hunting strategy in areas where hares were less abundant.

Lynx in the study rarely preyed on red squirrels, results suggest that red squirrels or their habitat have little effect on the distribution of lynx in Minnesota.

Results indicate that lynx locate their core areas and home ranges in areas with abundant regenerating (10-30 years old) forests and use these forests for hunting and resting. Therefore a key component of habitat management for lynx in Minnesota is the creation and maintenance of successional forest through timber harvest and natural or prescribed fire.

- **Den site selection:** In Burdett's (2008, pg. 63) study area, although lynx selected against lowland conifer for foraging, these forests often provide denning habitat and breeding females continued to show increased use of these forests during summer and fall when kitten mobility remained limited.

In Minnesota, at the larger scale, it appears that potential den sites may be associated with wetland areas. There was an increase in lowland conifer cover type because dens were often located in low-lying wet areas. Dens themselves were on upland but this was surrounded by wetter low-lying areas (Moen and Burdett 2008, pg 10).

Moen and Burdett (2008, pg. 5) found that presence or absence of horizontal and vertical cover appears to be more important than whether a den site is located on mature or regenerating forest. Den sites in Minnesota were mostly found in blowdown areas. The size and intensity of the blowdown area varied. The range observed went from 1 stem to a cluster of 5-6. The common theme seemed to be dense vertical and horizontal cover which in Minnesota was often provided by the tops of trees. However, dense cover was in some cases limited to the blowdown tree which the den site was located under.

Stem density and basal area was usually lower at the den site because these sites are often located in blowdown areas. Usually there is a horizontal cover component that comes from dead blowdown trees or thick regeneration of balsam fir that would not be measured when measuring stems with dbh >5 cm. A subjective generalization for the dens that were found would be that vertical cover is very thick but does not extend more than 2 m above ground level, and there is a range in horizontal cover from very little to dense, and that range can be seen within a den depending on direction one is looking away from the den (Moen and Burdett 2008, pg. 14).

The Forest Plan BA Model Parameters (USDA, 2004 Appendix D) identifies old forest (generally 80+ for conifer and 60+ for hardwoods) as lynx denning habitat. Moen and Burdett's (2008) findings emphasize micro-site rather than the importance of age of the forest for denning habitat. Given this new information, the Model Parameters would seem to highly underestimate the amount of suitable denning habitat. However, the model would retain some credibility because it captures the forests most likely to blowdown thereby providing those micro-site locations.

Selection of den site location does not appear to occur very many days before parturition. Date of parturition in Minnesota was 7 May (\pm 2 days) for 3 adult females based on GPS collar locations, female and kittens left the den at about 7 weeks (Moen and Burdett 2008, pg. 8).

- **Mortality:** The programmatic Biological Assessment (USDA FS 2004) identified paved roads as one of several factors contributing lynx mortality across its range. At that time, most documented lynx road mortality was in relocated animals suggesting that introduced animals may be more vulnerable to highway mortality than resident lynx (Brocke et al 1990 in USDA FS 2004). Since the writing of the programmatic BA more information has become available on lynx road mortality. It is evident by the data that follows, paved and gravel roads are both factors that contribute to resident lynx mortality.
 - In Minnesota, since 2001, 5 lynx are known to have been killed on roads (USDA FS 2007):
 - 2 were on paved highways (speed limits 46-60+ mph)
 - 2 were on paved secondary roads (speed limits 26-60 mph)
 - 1 was on a gravel Forest Service Road (OML 3) (speed limits 26-45 mph)
 - In Maine, since 2000, all lynx road mortality (6 animals) documented has occurred on (gravel) logging roads. Most mortality occurred on two-lane haul roads where higher traffic volume and speed would occur. These roads are open to the public, and public traffic volume exceeds logging traffic by several fold (McCullough in Delphey 2006).

Trapping, hunting, and other potential sources of human caused mortality are indirectly influenced by roads and are address in the programmatic BA. Since 2002, 5 lynx are known to have been shot and 17 lynx are known to have been trapped in Minnesota. Of the trapped lynx 9 were released alive (MN DNR 2008).

- **Interspecific relationships with other carnivores:** Researchers and managers have suggested that the presence of compacted snowmobile trails may allow coyotes to access lynx habitat from which they were previously excluded by deep, unconsolidated snow. This could then allow

coyotes to more effectively compete with lynx for snowshoe hares, the lynx's primary prey... Kolb *et al.* (2007, pg. 1409) reports coyotes did not travel closer to compacted snowmobile trails than random expectation (coyote x distance from compacted trails = 368 m, random expectation = 339 m) and the distance they traveled from these trails did not vary with daily, monthly, or yearly changes in snow supportiveness or depth. However, they strongly selected for naturally shallower and more supportive snow surfaces when traveling off compacted snowmobile trails. Coyotes were primarily scavengers in winter (snowshoe hare kills composed 3% of coyote feed sites) and did not forage closer to compacted snowmobile trails than random expectation. The overall influence of snowmobile trails on coyote movements and foraging success during winter appeared to be minimal in the study area (western Montana).

This study provides important information on lynx relationship with coyote but currently has few if any management implications for the SNF for 2 reasons; coyotes are not prevalent on the SNF due to the presence of wolves and the relationship between compacted snow trails and bobcats remains unknown.

- **Population dynamics:** No new information
- **Population Status (see section 4.4 of program-level BA)**

North America: No new information

Minnesota: According to the MN DNR as of Nov. 14, 2006 (MN DNR Lynx sighting website accessed July 13, 2006):

426 reports with location information have been received to date

63 (15%) reports have been verified as lynx

161 (38%) reports have had enough evidence to be considered "probable"

202 (47%) reports are unverified

35 (8%) reports are assumed to provide evidence of reproduction

Superior National Forest: The Natural Resources Research Institute (NRRI) study has captured and collared 33 lynx on the Superior NF. Adults and yearlings wore collars for over 15,000 radio-days, while kittens (animals radio-collared at < 1 year old) wore collars for about 3,500 days. Movements and habitat use have been documented including den locations. From 2004-2007 adult radio-collared females had 31 kittens in 10 litters. Status of 8 kittens that were marked at the den site or radio-collared is 5 dead and 3 alive >2 years. Only one animal collared as a kitten still has a transmitting radio collar. Of the 33 lynx radio-collared 17 are dead. Mean duration of monitoring was 1.6 years, with 21 of 33 lynx monitored for 1 to 3 years. Lynx have maintained a continuous presence from 2003 to date. At least 78 unique individual lynx have been identified genetically through 3/4/2008 with additional samples to be submitted this year (Moen *et al.* 2008).

- **Minnesota's lynx-hare cycles:** No new information
- **Population Status in Project Area:**

Project site-specific surveys: Two days of snow tracking surveys in March 2007 failed to detect lynx (project file). We have not received any reports of lynx from field-going personnel in the

last few years. We assume lynx presence throughout the project area and consider their habitat needs when planning management activities.

Known occurrences: Lynx sightings are sent to the MN DNR where they are compiled into a database. Lynx have been seen along several of the main roads including CR 4, FR 340 and FR 170. Lynx may be reproducing in the project area but we know of no den sites or reports of kittens.

- **Factors Affecting Lynx Environment (see section 4.5 of program-level BA)**
 - **Roads and trails:** No new information
 - **Winter dispersed recreation:** No new information
 - **Trapping and shooting:** No new information
 - **Vehicle collisions:** No new information
 - **Other factors:** The most critical period for denning Canada lynx is late April through July.

4.1 Status of the Species: Gray Wolf

Ecology (see section 3.3 of program-level BA)

- **Breeding habitat:** No new information
- **Home range and dispersal:** The 2007-08 MN DNR survey (Erb 2008) indicates that the broad distribution of wolves in Minnesota has not changed since the mid to late 1990's. While the duration between surveys has recently been shortened from 10 years to 5 years, recent surveys nevertheless indicate that coarse-scale wolf distribution in Minnesota is now static. Since 1998, when total wolf range appears to have stabilized, there has been no consistent increasing or decreasing trend in the amount of occupied range.

Average territory size was essentially identical during the last 2 wolf surveys. Average pack size does appear to have slightly declined through time, likely due in part to space-use competition in an increasingly saturated wolf range (Erb 2008).

- **Diet:** No new information

Population Status (see section 3.4 of program-level BA)

North America and Minnesota:

Today, wolves live in areas with higher road and human densities than previously believed could be suitable for wolf survival, although these two factors still limit the areas suitable for wolf packs.

Wolves continue to disperse to areas in west-central and east-central Minnesota (just north of Minneapolis/St. Paul), North and South Dakota, and Wisconsin. (USDI FWS 2008)

The Minnesota Wolf Management Plan (MN DNR 2001) establishes a minimum population of 1,600 wolves (in Zone A) to ensure the long-term survival of the wolf in Minnesota. The Minnesota wolf population has grown from fewer than 750 animals in the 1950s to the current estimate of 2,921 (90% confidence interval: 2,192 - 3,525) (Erb, MN DNR 2008).

Gray wolf populations in northern Minnesota are stable or increasing as are subpopulations in Wisconsin and Michigan. As a result of the increasing Minnesota population and the development of viable populations in neighboring states, the U.S. Fish and Wildlife Service removed Endangered Species Act protection for the Gray Wolf Western Great Lakes Distinct Population Segment in 2007. The final rule to delist this Distinct Population Segment was published in the Federal Register on February 8, 2007 and took effect on March 12, 2007 (USDI 2007a).

Management of the wolf on the SNF then became governed by the Minnesota Wolf Management Plan (MN DNR 2001). Management objectives for gray wolves on the Superior National Forest changed from seeking to recover the species to seeking to maintain, protect and enhance its habitat and prevent federal listing.

On Sept 29, 2008 a federal court overturned this decision, returning gray wolves in the western Great Lakes region to their status as threatened.

Superior National Forest: Since 1969, the wolf population on the Superior NF has averaged about 1 wolf per 14 – 15 sq. mi. (Forest Plan Programmatic BA, 2004, p51). Wolves may be more numerous now than before 1900 (Forest Plan Programmatic BA, 2004, p51). It also appears that human persecution before protection under the Endangered Species Act was a major factor in depressing wolf numbers (Forest Plan Programmatic BA, USDA Forest Service, 2004e, p55). The Programmatic Biological Opinion (BO) for the Forest Plan (US Fish and Wildlife Service, 2004), considered the human-caused mortality to be the major limiting factor to wolves (pp13 and 14) and that road access control is important to minimizing adverse effects to wolves (p.17).

- **Summary of wolf mortality in Minnesota:** No new information.

Population Status in Project Area:

- **Project site-specific surveys:** There have been no project-level surveys specific to gray wolves but wolf tracks were recorded during two days of snow tracking surveys (project file). We assume wolf presence throughout the project area and consider their habitat needs and human disturbance factors when planning management activities.
- **Known occurrences:** Wolves and wolf sign have been observed throughout the project area. The exact number of individual or packs that use the project area is unknown; however, suitable foraging habitat is abundant and well distributed across the project area and is assumed occupied. Wolf tracks, scat and sightings from the project area are reported on a regular basis.

Factors Affecting Wolf Environment

- **Prey habitat:** No new information
- **Human access:** The most critical period for denning wolves is late April through May
- **Other factors:** No new information

5.0 Affected Environment and Environmental Consequences

CANADA LYNX:

A. Analysis Area:

- **Direct/Indirect Effects Analysis Area:**
 - *Habitat indicators:* The analysis area is federal lands within LAU 35 and 36.
 - *Human Disturbance indicators:* The analysis area is federal roads within LAU 35 and 36.
- **Cumulative Effects Analysis Area:** Cumulative effects consider all ownerships and roads within LAU 35 and 36. Past actions are taken into account in the existing condition. Present and foreseeable future (10 yrs) actions are considered. See Appendix G of the EA for a description of project activities considered in the Cumulative Effects analysis for this species (USDA 2008).
- **Analysis timeframe:**
 - *Existing condition:* 2008
 - *Direct/indirect and Cumulative effects:* 2014

Rationale for analysis are and timeframe: See Superior National Forest Plan Appendix E: Canada Lynx Section 5. Scales of Analysis, pg E-3 for rationale for spatial analysis boundary. A reasonably foreseeable future timeframe of ten years is appropriate because it includes all known future projects and provides a reasonably reliable estimate of what is expected to happen. The year 2014 marks the first decade of the Forest Plan and is used as our benchmark to measure cumulative changes to management indicator habitats.

B. Effects Analysis:

On February 28, 2008, the Fish and Wildlife Service proposed revising the Canada lynx critical habitat designation to include all of the Superior National Forest (and other lands in Northeastern Minnesota) as critical habitat (USDI FWS 2008b). Lynx analysis indicators for this biological assessment serve as appropriate indicators for analysis of effects to proposed critical habitat and its constituent elements. This is because the indicators address relevant *Primary Constituent Elements* of lynx habitat - those physical and biological features that are essential to the conservation of the species. Table 5 below crosswalks the lynx indicators to the Primary Constituent elements (PCE):

Proposed critical habitat for lynx is defined as boreal forest landscapes supporting a mosaic of differing successional forest stages and containing:

- a) Presence of snowshoe hares and their preferred habitat conditions, including dense understories of young trees or shrubs tall enough to protrude above the snow;
- b) Winter snow conditions that are generally deep and fluffy for extended periods of time;
- c) Sites for denning having abundant coarse, woody debris, such as downed trees and root wads; and
- d) Matrix habitat (*e.g.*, hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range. The important aspect of matrix

habitat for lynx is that these habitats retain the ability to allow unimpeded movement of lynx through them as lynx travel between patches of boreal forest.

Table 5. Analysis Indicators selection and rationale for exclusion: Canada Lynx			
Forest Plan BA Indicator	PCE	Use?	Rationale for exclusion
1a. Snowshoe hare habitat acres	a	Y	
1b. Percent of unsuitable habitat on NFS land	a, b, c, d	Y*	*Covered under indicator 12
2. Acres of red squirrel habitat	d	N	Red squirrels or their habitat have little effect on the distribution of lynx in Minnesota (Burdett 2008). Alternative (to hare) prey would not be a significant component of lynx diets in winter (Hanson and Moen 2008). The SNF will continue to monitor red squirrel habitat on an annual basis but it will not be analyzed at the project level.
3. Denning habitat in patches > 5 acres	c	Y	Denning habitat exists in abundance in the project area as it does in most parts of the SNF. Recent research indicates that the use of cover type and age are less important than micro-site habitat for lynx denning (Moen and Burdett 2008, Burdett 2008). This means the current model parameters are expected to <i>underestimate</i> lynx denning habitat.
4. Percent of lynx habitat in LAUs with adequate canopy cover- upland forest > 4 years old and lowland forest > 9 years old	a, c, d	Y	
5. Miles of ATV trails allowed	b	N	There are currently 27.1 miles of trail open to motorized recreation. 25.7 miles would be open to motorized recreation following the proposed alternative of the Travel Management Rule. These will remain open and not vary by alternative.
6. Miles of snowmobile trails allowed	b	N	There are currently .09 miles of designated snowmobile trails in the project area. These will remain open and not vary by alternative.

Table 5. Analysis Indicators selection and rationale for exclusion: Canada Lynx			
Forest Plan BA Indicator	PCE	Use?	Rationale for exclusion
7. Miles of temp and OML 1&2 roads	b	Y	Temporary roads and OML1 roads discussed. No change in OML 2 proposed with this project.
8. Policy on cross-country use of ATVs and snowmobiles	b	N	This project proposes no change to policy on cross-country use of ATVs and snowmobiles.
9. Policy on use of ATVs and snowmobiles on OML 1&2 roads		N	This project proposes no change to policy on ATVs and snowmobile use of OML 1 and 2 roads.
Other Indicators			Rationale for inclusion
10. Acres of snowshoe hare habitat in which within stand structure will be increased thru diversity and under-planting of conifer on SNF lands.	a	Y	To compare effects of alternatives on quality of hare habitat (increasing small diameter conifers and stand structure). This will help assess O-WL-5 and O-WL-9
11. Acres and % of lynx habitat currently unsuitable on all ownerships	a, c, d	Y	Provides information to examine G-WL-3 (minimum of 30% unsuitable on all ownerships)
12. Cumulative change to unsuitable condition on NFS lands. (S-WL-1)	a, c, d	Y	Provides information to examine S-WL-1 (minimum of 15% unsuitable in 10 yr period on NFS)
13. Road and compacted trail density on all ownership.	b	Y	Provides information to examine G-WL-8 (2 miles /square mile).

Existing Conditions and Effects

Lynx Habitat – Forest Condition Indicators (Indicators 1, 3, 4, 10)

Indicator 1a: Snowshoe Hare Habitat on National Forest Lands in the Project Area.								
Lynx Analysis Units	Existing Condition		Acres and percent of habitat in 2014					
	Snowshoe Hare Habitat		Alternative 1 (no action)		Alternative 2		Alternative 3	
	Acres	%	Acres	%	Acres	%	Acres	%
LAU 35	22,186	86	21751	84	21828	84	21774	84
LAU 36	15,967	62	15308	59	15494	60	15474	60

Data source: ¹ based on August, 2008 CDS data and all alternatives are based on projected CDS data in the year 2014. Data run by Tom McCaan. *Footnotes:* percentage = snowshoe hare habitat divided by total project area lynx habitat on NFS lands (LAU 35 = 25,936, LAU 36 = 25,845)

Indicator 4: Acres and percent of lynx habitat with adequate canopy cover on National Forest Lands in the Project Area

Lynx Analysis Units	Acres and percent of habitat in 2014							
	Existing Condition		Alternative 1 (no action)		Alternative 2		Alternative 3	
	Acres	%	Acres	%	Acres	%	Acres	%
LAU 35	24,693	95	24,707	95	21,971	85	22,854	88
LAU 36	24,001	93	24,218	94	21,482	83	22,365	87

Data source: ¹ based on August, 2008 CDS data and all alternatives are based on projected CDS data in the year 2014. Data run by Tom McCaan. Hand calculations for Alternatives 2 and 3 by Peg Robertsen using acres of even-aged treatments. Percentage = acres divided by total project area lynx habitat on NFS lands (LAU 35 = 25,937, LAU 36 = 25,845)

Indicator 3: Denning Habitat in patches > 5 acres on National Forest Lands in the Project Area

Lynx Analysis Units	Existing Condition			Denning habitat in patches > 5 acres					
	Forested Lynx Habitat	Denning habitat in patches > 5 acres		Alternative 1 (no action)		Alternative 2		Alternative 3	
		Acres	Acres	%	Acres	%	Acres	%	Acres
LAU 35	24,707	16,396	66	17,005	69	16,299	66	16,865	68
LAU 36	24,254	10,693	44	10,583	44	8,999	37	9,394	39

Data source: ¹ based on August, 2008 CDS data and all alternatives are based on projected CDS data in the year 2014. Data run by Tom McCaan.

Indicator 10: Project Area acres where planting or seeding of young conifer is proposed.

Lynx Analysis Units	Existing Condition	Alternative 1	Alternative 2	Alternative 3
LAUs 35&36	NA	0	1,097	1,143

Data source: Clara project unitcard database. Includes acres planned for underplanting, interplanting, planting and seeding of conifer. Estimates are based on stand acres. Actual treated acres would be less due to site specific factors.

Lynx Habitat – Cumulative Vegetative Effects Indicators (Indicators 11 and 12)

Indicator 11 provides a measure of G-WL-3 which states “limit disturbance within each LAU on NFS lands as follows: if more than 30% of the total lynx habitat (all ownerships) within an LAU is currently in unsuitable condition, no further reduction of suitable condition should occur as a result of vegetation management activities by National Forest.

Indicator - 11: Lynx habitat currently in an unsuitable condition on all ownerships.			
LAU	Total Lynx Habitat on all ownerships (acres)	Currently Unsuitable	
		Acres	%
35	31,057	29	0.1
36	31,670	276	0.9

Data source: LAU assessment model change detection run for the Superior National Forest 2007 monitoring report (08/07).

Indicator 12 is used to measure S-WL-1 which states that management activities on NFS lands shall not change more than 15% of lynx habitat on NFS lands within an LAU to an unsuitable condition within a 10-year period. This indicator measures the cumulative change of lynx habitat within a decade such that, for example, a stand set to zero at Year X is counted toward this indicator until Year X + 10, regardless if the stand becomes suitable for lynx prior to Year X + 10. The baseline for each LAU was set to zero at the time of plan implementation (July 2004).

Indicator – 12: Cumulative change to unsuitable habitat condition in 10 years on NFS lands.								
LAU	Forest Plan Baseline 2004*		Alternative 1 (no action)		Alternative 2		Alternative 3	
	Acres	%	Acres	%	Acres	%	Acres	%
35	2,371	10	50	0.2	1036	4	252	1
36	3,751	15	753	3	2644	11	2226	9

*Data source: * Forest Plan LAU Analysis April 2004 for existing condition. Superior NF lynx model results for the Clara Project 11/06/08.*

Lynx Habitat – Human disturbance/Access Indicators (Indicator 7 and 13)

Indicator 13 below is used to measure G-WL-8 which states that within LAUs generally maintain road and snow-compacting trail densities below 2 miles per square mile to maintain the natural competitive advantage of lynx in deep snow. Where total road and regularly-used snow-compacting trail densities are greater than 2 miles per square mile and coincide with lynx habitat, prioritize roads for seasonal restrictions or reclamation in those areas, where practical or feasible. In this guideline “roads” include all

ownerships of classified and unclassified roads and “regularly-used trails” are those that are used most years for most of the snow season.

Indicator 13: Road and snow-compacted Trail Density.						
Lynx Analysis Units	Land Area sq. mi	Existing Condition 2007/ Alt 1*		Road/trail density under Alternative 2 of Travel Management Rule*	Road/trail density under Alternative 2 of Clara **	Road/trail density under Alternative 3 of Clara **
		miles	mi/mi			
LAU 35	40.0	45	1.1	1.0	1.0	1.0
LAU 36	39.0	81	1.92	1.90	1.96	1.95

* Data source: December 2007 Monitoring and Evaluation Report; LAU 35 = 25,700 land base acres, LAU 36 = 25,304 land base acres and Biological Assessment for the Travel Management Project 2008. LAU 35 reduction of 3.4 miles; LAU 36 reduction of 3.2 miles. **Data source: Clara EA. Increase due to two OML1 roads open to ATVs during moose hunting season and closed the rest of the year (Alt 2 = 1.8 miles, Alt 3 = 1.2 miles. Densities would be lower if Alternative 2 of the Travel Management Proposal is implemented.

Indicator 7: Temporary roads, OML-1			
LAU	Temporary Road Miles*		
	Existing Condition / Alternative 1	Alternative 2	Alternative 3
LAU 35	0	3.4	1.5
LAU 36	0	5.9	4.5
Total	0	9.3	6.0
Miles of OML-1 constructed and open to ATV			
LAU 35	0	0	0
LAU 36	0	1.8	1.2

Data source: Clara project road shape files.

* Temporary roads include new construction for temporary access. All newly constructed temporary roads will be obliterated and allowed to return to a more natural state once reforestation objectives have been met. Decisions on unclassified roads are covered in the Travel Management EA 2008

CUMULATIVE EFFECTS

The Clara EA alternatives were considered along with past, present and expected future management actions to address the cumulative effects on lynx. Appendix G of the Clara EA summarizes the list of activities considered for all ownerships (USDA 2008). Indicator 11 measures the amount of unsuitable habitat across all ownerships. The combined effects of all known road and trail management actions were considered.

Adverse cumulative effects are not expected from vegetation management activities in LAU 35 or 36. More than 89% of lynx habitat would remain suitable across all ownerships within a ten year period under any of the alternatives (Indicator 12). We expect many of the State forest acres to continue to provide habitat and that minimal timber harvesting will take place on private lands (Appendix G, USDA 2008). Federal lands make up a large percentage of each LAU. The amount of habitat on federal lands should offset any short-term loss in habitat on nonfederal lands. Timber harvesting could benefit lynx by creating habitat for prey species. Denning and foraging habitat would continue to be adequately distributed throughout each LAU.

As stated in the Programmatic BA, the greatest potential for cumulative negative impacts on lynx recovery is likely to be the result of human access. With Alternatives 2 and 3 of the Clara EA, between 1.2 and 1.8 miles of road would be open to ATVs during the moose hunting season (Oct. 1-22). These roads would be blocked to other types of vehicle use and posted closed to all off-road vehicles during the nonhunting season. This is expected to have little to no direct or indirect effects on lynx when these restrictions are applied. The Proposed Alternative of the Forest Travel Management Plan would result in a net increase of .1 miles open to motorized recreation within the project area (Appendix G, USDA 2008). The combined road/trail density on all ownerships would remain below 2 mi/sq. mi under any alternative (Indicator 13). Temporary road miles are small (Indicator 7) and unlikely to have a measurable effect on lynx even when considered along with nonfederal temporary roads. I expect insignificant effects on lynx from the proposed road actions in Clara when considered with all other road activities.

Insignificant or discountable effects are expected for lynx from all other activities listed in Appendix G of the Clara EA. Using fire for restoration or fuel reduction may temporarily reduce foraging conditions but is expected to improve prey habitat in five or more years. Fuel reduction activities may lead to the removal of downed trees which provide denning sites. Restoration activities such as mechanical site prep will generally leave overstory trees standing but reduce shrub cover. The cumulative effect of all these activities on denning habitat is expected to be minimal due to the low number of acres being treated and the availability of denning habitat in these LAUs. Lynx on the Superior National Forest den in a variety of habitats and generally choose areas with dense brush or regenerating fir for den site concealment (Moen and Burdett 2008). These types of microsites are abundant throughout both LAUs.

Private land development and road building will continue as will increased recreational demand in Clara. These activities could reduce the lynx competitive advantage and increase the risk of mortality. Residential development around lakes may reduce habitat quality. The high percentage of federal lands in these areas (LAU 35 = 83%, LAU 36 = 80%) will help offset the negative effects from development that lynx may encounter on nonfederal lands.

C. Consistency with Forest Plan:

Forest Plan Guidance	Direction	Alts In Compliance	Basis for Compliance	Remarks
O-WL-4	Maintain or improve habitat	All	All analysis indicators	Key vegetative habitat components are maintained in all alternatives. Planting conifers would improve habitat in Alternatives 2 and 3 (see O-WL-5) (Indicator 10).
O-WL-5	Seek opportunities to benefit TE spp.	All	Indicator 10	Of the alternatives, Alternative 1 results in the least amount of human-related disturbance. The action alternatives, 2 & 3, propose conifer planting within mature forest which could lead to local increases in prey diversity or abundance.
O-WL-6	Reduce or eliminate adverse effects to TE	All	Project design and mitigation measures.	Adverse effects are not expected with any alternative.
O-WL-7	Minimize building or upgrading roads in TE areas	All	Project design Indicators 7 and 13	Between 1.2 and 1.8 miles of OML1 road would be opened to ATVs during moose hunting season in Alts 2 and 3. Road/trail densities would remain below 2 mi/sq. mi in all alternatives. All temporary roads needed to access harvest units will be obliterated and allowed to return to a more natural state once reforestation objectives have been met.
O-WL-8	Promote the conservation and recovery of Canada lynx	All	All analysis indicators	All alternatives would maintain suitable habitat and avoid negative impacts.
O-WL-9	Manage for hare and alt prey habitat	All	Indicators 1, 10, 11 and 12	Prey habitat would be abundant and well-distributed in all alternatives. All alts. maintain at least 65% snowshoe hare habitat.
O-WL-10	Provide foraging habitat in proximity to denning habitat	All	Maps of habitat with proposed treatments.	Denning habitat in patches greater than 5 acres is within 3 miles of adequate foraging habitat. See G-WL-10 below.

Forest Plan Guidance	Direction	Alts In Compliance	Basis for Compliance	Remarks
O-WL-11	Maintain habitat connectivity to reduce road mortality	All	Maps of habitat with proposed treatments. Indicator 4	Vegetative connectivity for movement across the LAUs is maintained with all alternatives (see O-WL-10). Foraging and denning habitat would remain well distributed through out the project area in all alternatives.
O-WL-12	Participate in efforts to identify, map, and maintain linkage areas	n/a	n/a	This effort is being conducted on a regional scale
O-WL-13	Maintain competitive advantage of lynx in deep snow	All	Indicator 7 and 13	All temporary roads needed to access harvest units will be obliterated and allowed to return to a more natural state once reforestation objectives have been met.
O-WL-14	Participate in efforts to reduce lynx mortality on roads	n/a	n/a	This project is not specifically designed to reduce lynx mortality on roads.
O-WL-15	In BWCAW, lynx habitat will result from natural processes	n/a	n/a	This project does not occur in the BWCAW and will have no effect on lynx refugia habitat.
G-WL-1	Moderate timing and intensity of mgt activities to maintain lynx habitat	All	Project design	Activities would take place over the course of 5 years. There is sufficient habitat to accommodate changes.
G-WL-2	Provide protection of known den sites	All	Forest Plan	No den sites are known in the project area. If one is discovered it would be protected.
G-WL-3	No more than 30% of an LAU in unsuitable condition across all ownerships.	All	Indicator 11	Less than 1% of either LAU is currently unsuitable across all ownerships.
S-WL-1	No more than 15% change to unsuitable in 10 years on NFS lands.	1-3	Indicator 12	I expect no more than a 4% change in lynx unsuitable habitat in the next ten years on National Forest Service Lands in LAU 35. I expect no more than a 11% change in lynx unsuitable habitat in the next ten years on NFS lands in LAU 36.
G-WL-4	Maintain at least 10% denning habitat	All	Indicator 3	Denning habitat would remain above 65% in LAU 35 and above 35% in LAU 36 under any alternative.

Forest Plan Guidance	Direction	Alts In Compliance	Basis for Compliance	Remarks
G-WL-5	Following disturbance, retain at least 10% denning habitat.	n/a	n/a	This project is not proposing to salvage after a natural disturbance
S-WL-2	No net increase in groomed or designated over-the-snow trails	n/a	n/a	This project does not propose to create any new snow-compacting trails.
G-WL-6	New over-the-snow routes should be designed to benefit lynx	n/a	n/a	This project does not propose to create any new snow-compacting trails.
G-WL-7	Close trails and roads that intersect with new snow-compacting trails.	n/a	n/a	This project does not propose to create any new snow-compacting trails.
G-WL-8	Maintain road density at or below 2mi/mi ²	1-3	Indicator 13	Existing road/trail density would remain below 2mi/mi ² under any alternative.
G-WL-9	Do not upgrade or pave dirt or gravel roads	n/a	n/a	This project does not propose to upgrade or pave dirt roads

Affected Environment and Environmental Consequences

GRAY WOLF:

A. Analysis Area:

- **Direct/Indirect Effects Analysis Area:**
 - *Habitat indicators:* Analysis area for all indicators is federal lands within the project area.
 - *Human Disturbance indicators:* Analysis area for all indicators is federal roads within the project area. Lynx Road Indicators by LAU were considered as well.
- **Cumulative Effects Analysis Area (for NEPA and ESA):**
 - Cumulative effects analysis area is the project area. Past actions are reflected in the existing condition. Present and foreseeable future (to 2014) actions are considered in the effects of the actions. See Appendix G of the Clara EA for past, present, and reasonably foreseeable future projects considered in the cumulative effects analysis for this species.
- **Analysis timeframe:**
 - *Existing condition:* 2008
 - *Direct/indirect and Cumulative effects:* 2014

Rationale for analysis areas and timeframe:

- *Direct and indirect effects analysis area:* The analysis area boundaries are appropriate because they are large enough to overlap potential territories of packs and are an appropriate size to address the impacts to these packs. Per ESA Section 7 Consultation Handbook, cumulative effects are to be considered in the action area (for purpose of this analysis action area = project area).
- *Cumulative effects analysis area:* Cumulative effects analysis area is the project area. The programmatic BA has done a complete job of considering cumulative effects to wolf habitat across a broad landscape, to which effects are similar at the project scale. It is not necessary to go out to the Wolf Zone scale because this project does not change the road density of OML 3-5 roads. The appropriate scale for cumulative effects is the project scale because the concern for negative impacts comes primarily from human disturbance which is best measured at the site-specific scale. Human access effects of this project will not go beyond the project area scale. Therefore, cumulative effects should be measured at this scale.
- *Timeframe:* The timeframe for analysis is 2014. This time frame allows for a reasonable prediction of projects that could contribute to cumulative effects (past, present and reasonably foreseeable future). The year 2014 marks the first decade of the Forest Plan and is used as our benchmark to measure cumulative changes to management indicator habitats.

B. Effects Analysis:

Indicators

Table 7. Analysis Indicators selection and rationale for exclusion: gray wolf.		
Forest Plan BA Indicator	Use?	Rationale for exclusion
1. Acres and percent of young upland forest <10 years old (MIH 1 young)	Y	
2. Acres and percent of upland conifer (spruce and pine) > 9 years old on all uplands (MIH 5 pole+)	Y	
3. Proposed miles of RMV trails	N	There are currently .09 miles of designated snowmobile trails in the project area. There are currently 27.1 miles of trail open to motorized recreation. 25.7 miles would be open to motorized recreation following the proposed alternative of the Travel Management Rule. These will remain open and not vary by alternative.
4. Cross-country use policy for RMVs	N	This project proposes no change on the RMV cross-country use policy.
5. Miles of temp and OML 1 roads	Y	
Other Indicators		Rationale for inclusion
6. Miles of road open to the public and passable by two wheeled drive vehicle (OML 3-5 roads) in the project area.	Y	To help assess O-WL-17, S-WL- 4, impacts to critical habitat and human access/ disturbance

Indicators 1 & 2: Habitat indicators for Gray Wolf								
Indicators	Existing Condition - 2008		Alt 1 – No Action 2014		Alt 2 - 2014		Alt 3 – 2014	
	acre	%	Acre	%	acres	%	acres	%
1. Acres and percent of young upland forest <10 years old	128	0.5	12	0	2895	11.4	1702	6.7
2. Acres and percent of upland conifer (spruce and pine) > 9 years old on all uplands	6,885	27	11,328	45	9,708	38	9,864	39

Data source: Existing condition for vegetation indicators are based on 2008 CDS data, and all alternatives are based on projected CDS data in the year 2014. *Other Footnotes:* Percentages are based on the percent of total upland forest on federal lands in the project area (25,300 acres) for the Mesic Birch-Aspen-Spruce-Fir Landscape Ecosystem.

Indicator 5: Human Disturbance Indicators for Gray Wolf -Temporary and open OML1 Roads				
Indicators	Existing Condition - 2008	Alt 1 – No Action 2014	Alt 2 - 2014	Alt 3 – 2014
Temporary Roads (miles)*	0	0	9.3	6.0
OML-1 roads constructed and open to ATVs (miles)	0	0	1.8	1.2

Data source: Clara project road shape files.

* Temporary roads include new construction and the use of unclassified roads for temporary access. All newly constructed temporary roads will be obliterated and allowed to return to a more natural state once reforestation objectives have been met. Decisions on unclassified roads are covered in the Forest Travel Management EA 2008.

Existing road miles and changes by type under Alternative 2 of the Travel Management Project for the Clara Project Area.

Road Miles by Type			
Road Type	Total Miles	TMR Miles *	Change in Miles
Unclassified	3.7	0	-3.8
OML 1	4.7	5.3	0.6
OML 2	20.7	21.6	0.9
OML 3	6.7	6.7	0
OML 4	21.9	21.9	0
OML 5	9.3	9.3	0
Total	84.5	82.3	-2.3

Data source: Clara project road shape files. * TMR = Travel Management Rule, Travel Management EA 2008.

Road miles open to motorized recreation and changes by type under Alternative 2 of the Travel Management Project for the Clara Project Area.

Open to Motorized Recreation			
Road Type	Currently Open	TMR Open *	Change in Miles **
Unclassified	3.7	0	-3.8
OML 1	2.6	2.0	-0.6
OML 2	20.7	19.0	-1.7
OML 3	0	2.3	2.3
OML 4	0	3.9	3.9
Total	27	27	0.1

Data source: Clara project road shape files. * TMR = Travel Management Rule, Travel Management EA 2008. ** Increase is occurring on roads that currently have traffic.

Cumulative Effects

The action alternatives may lead to positive benefits for wolves by creating foraging habitat for prey species. Alternatives 2 and 3 would create more foraging habitat for deer and moose than Alternative 1 on federal lands (Indicator 1, young upland forest). Under Alternative 1, the No Action Alternative, natural disturbance events and management activities would continue to provide new growth in vegetation and foraging habitat. Mature spruce-fir forest types dominate the project area and thermal cover for deer and moose is believed to be adequate under all the alternatives. Moose and deer populations are not expected to be limiting factors for wolves under the Revised Forest Plans (USDI 2004).

There are no past, present or reasonably foreseeable Forest Service vegetation management actions in the project area that would significantly affect prey habitat for wolves or lead to high levels of disturbance (Appendix G, Clara EA). Timber harvesting, restoration and fuel reduction activities are expected to improve foraging conditions for moose and deer. Nonfederal lands (19% of project area) will continue to provide habitat in some areas but are not expected to contribute significantly to the availability of forage for deer and moose.

The effect of human disturbance on wolves is expected to be insignificant under any of the EA alternatives. The density of higher standard roads (OML 3-5) in the project area is currently below 1 mile/square mile which is recommended for minimizing wolf mortality. The Proposed Alternative of the Forest Travel Management Plan would result in a net increase of .1 miles open to motorized recreation within the project area (Appendix G, USDA 2008). With Alternatives 2 and 3 of the Clara EA, between 1.2 and 1.8 miles of road would be open to ATVs during the moose hunting season (Oct. 1-22). These roads would be blocked to other types of vehicle use and posted closed to all off-road vehicles during the nonhunting season. This is expected to have little to no direct or indirect effects on wolves when these restrictions are applied. All temporary roads needed to access harvest units will be obliterated and allowed to return to a more natural state once reforestation objectives have been met. Alternative 1 results in the lowest risk of disturbance since no new roads or harvest units are proposed.

Insignificant or discountable effects are expected for wolves from all other activities listed in Appendix G of the Clara EA. Using fire for restoration or fuel reduction may temporarily reduce foraging conditions but is expected to improve prey habitat in five or more years. Minimal effects are expected as a result of mechanical fuel reduction or reforestation. Wolves are habitat generalists and undisturbed habitat remains abundant under any alternative.

C. Consistency with Forest Plan:

Table 8. Compliance of alternatives with Forest Plan direction: gray wolf			
Forest Plan Guidance	Direction	Alts In Compliance	Basis for Compliance
O-WL-4	Maintain or improve habitat	All	Prey habitat (foraging and/or thermal cover) increases in Alternatives 2 and 3 (Indicator 1 & 2). Natural disturbance would be depended on to create prey habitat under Alt 1 (no action). Alt 1 would have no effects from temporary roads.
O-WL-5	Seek opportunities to benefit TE spp.	All	Of the alternatives, Alternative 1 results in the least amount of human-related disturbance. The action alternatives, 2 & 3, propose conifer planting within mature forest which could lead to local increases in prey diversity or abundance.
O-WL-6	Reduce or eliminate adverse effects to TE	All	Alt 1 would have no effects from temporary roads or human disturbance related to proposed activities. In Alternatives 2 and 3, mitigation measures would protect wolves and wolf dens if found.
O-WL-7	Minimize building or upgrading roads in TE areas	All	Between 1.2 and 1.8 miles of OML1 road would be opened to ATVs during moose hunting season in Alts 2 and 3. All temporary roads needed to access harvest units would be obliterated and allowed to return to a more natural state once reforestation objectives have been met.
O-WL-17	Promote the conservation and recovery of gray wolf	All	All alternatives provide adequate levels of suitable habitat (Indicator 1 & 2). Mitigations/design features would protect den sites if found.
S-WL-3	Follow Eastern Timber Wolf Recovery Plan (ETWRP)	All	Overall management of the SNF is governed by the Forest Plan (2004) which tiers to the Recovery Plan.
G-WL-10	Provide for the protection of known active den sites	All	<p>If a gray wolf den or rendezvous site is found during planning, layout or operations, activities would be halted in the area and the District Biologist would be notified. The Forest Plan, (ETWRP) and conservation strategies would be used when making mitigation recommendations. Logging and hauling restrictions also would provide protection to wolves as the most critical period for wolf denning coincides with spring breakup when restrictions to these activities are in place.</p> <p>*Seasonal restrictions – for den sites consider pups usually born early to mid April and stay in the den 6-8 weeks (restrict activities April-May). Rendezvous sites used from time pups leave the den through Sept (Forest Plan BA, section 3.3 Wolf Ecology page 49-50).</p>

D. Determination of Effect: Gray Wolf

Table 9. Effect of the Alternatives on Gray Wolf and Critical Habitat		
Alternative	Determination	Summary of Rationale
1	Gray Wolf: Not Likely to Adversely Affect Critical Habitat: Not Likely to Adversely Modify	<p>Forest conditions would continue to provide for wolf denning, foraging, and movement across the analysis area. Prey foraging habitat would be more limited than in Alternative 2 or 3 but deer populations are expected to be maintained. Thermal cover provided by the spruce and balsam fir component would increase through natural succession as the stands continue to mature. There would be no effects from temporary roads. The density of High Standard Roads (OML 3-5) would remain low.</p> <p>Alternative 1 would comply with all applicable Forest Plan management direction related to the Timber Wolf and critical habitat</p>
2	Gray Wolf: Not Likely to Adversely Affect Critical Habitat: Not Likely to Adversely Modify	<p>Forest conditions would continue to provide for wolf denning, foraging, and movement across the analysis area. More young forest would result from this alternative (Indicator 1) than from Alternatives 1 or 3 which could benefit deer and moose. Thermal cover provided by the spruce and balsam fir component would increase through natural succession as the stands continue to mature. This alternative would result in 9.3 miles of temporary road (Indicator 5). There would an additional 1.8 miles of road open to ATVs during the moose season. This effect is expected to be small when considered with the cumulative effects of road closures from the Travel Management Rule. Effects from temporary roads are expected to be short-term and insignificant. The density of High Standard Roads (OML 3-5) would remain unchanged and below 1 mi/mi². If a wolf den is discovered, it would be protected from disturbance (see Operational Standards and Guidelines). Cumulative effects are expected to be minimal due to the high percentage of federal ownership in the Clara project, unroaded areas left undisturbed and the benefits to wolves in creating prey foraging habitat. Wolf populations appear to be healthy on the Superior National Forest and in the project area.</p> <p>Alternative 1 would comply with all applicable Forest Plan management direction related to the Timber Wolf and critical habitat.</p>

6.0 Operational Standards and Guidelines (see also Appendix E in EA)

Table 10. Mitigation and design features	Alternatives	Risk Factor addressed
All species		
<p>The Biologist or Botanist may identify other species of concern specific to the project area. A list of species of concern and important habitat components will be provided to the implementation crew prior to layout operations. If any threatened, endangered or sensitive plants and animals or their nests, dens or roost trees are found during planning layout or operations, activities would be temporarily halted in the area and the District Biologist or Forest Botanist would be notified. The District Biologist or Botanist would assess the risk to species and where appropriate; mitigation measures would be implemented prior to restarting operations. The Forest Plan, recovery plans and conservation strategies will be used when making mitigation recommendations.</p>	<p>All action alternatives</p>	<p>Human disturbance</p>
Canada Lynx		
<p>Protect known active den sites during the denning season (G-WL-2). If a lynx den is discovered in the project area planning, layout, or operations, activities would be temporarily halted until the end of the denning season (denning season is typically April through July).</p>	<p>All action alternatives</p>	<p>Human disturbance</p>
Gray wolf		
<p>Provide for the protection of known active gray wolf den sites during denning season (G-WL-10). If a gray wolf den or rendezvous site is found during planning, layout or operations, activities would be halted in the area and the District Biologist would be notified. The biologist would assess the risk to species and where appropriate; mitigation measures [restricting activities within up to 880 yards (MN Wolf Mgt. Plan 2001) of site and/or imposing seasonal restrictions*] would be implemented prior to restarting operations. The Forest Plan, (ETWRP) and conservation strategies would be used when making mitigation recommendations.</p>	<p>All action alternatives</p>	<p>Human disturbance</p>

Table 10. Mitigation and design features	Alternatives	Risk Factor addressed
*Seasonal restrictions – for den sites consider pups usually born early to mid April and stay in the den 6-8 weeks (restrict activities April-May). Rendezvous sites used from time pups leave the den through Sept (Forest Plan BA, section 3.3 Wolf Ecology page 49-50).		

7.0 Monitoring

The Forest Plan identifies three monitoring elements related to threatened and endangered species (Chapter 4, Table MON-4):

- To what extent is Forest management contributing to the conservation of threatened and endangered species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions and population trends?
- To what extent are road and trail closures effective in prohibiting unauthorized motor vehicle use?
- To what extent is the Forest maintaining no net increase in groomed or designated over-the-snow trail routes unless the designation effectively consolidates use and improves lynx habitat through a net reduction of compacted snow areas?

8.0 Signature

Conducted by: /s/ Peg Robertsen Date: 12-12-08

9.0 References

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