

Chapter 3 Affected Environment & Effects

Introduction

Chapter 3 describes the potentially affected resources of the amendment area and the effects of the alternatives on these resources.

Chapter organization

Chapter 3 is organized into sections by resource. The sections are:

- ♦ Lynx
- ♦ Other wildlife & fish
- ♦ Fire
- ♦ Forests
- ♦ Plants
- ♦ Range
- ♦ Recreation
- ♦ Transportation
- ♦ Minerals
- ♦ Land ownership
- ♦ Special use permits
- ♦ Social/economic
- ♦ Other disclosures

Each section describes the affected environment for that resource and discloses the impacts of Alternative A, the no-action alternative, Alternative B, the Proposed Action and the other action alternatives, C, D and E.

Each resource section is supported by specialist reports and data in the Project Record.

NEPA regulations in Section 1500.5, Reducing Paperwork, says environmental documents should be short, written in plain language, analytic rather than encyclopedic and discuss only briefly issues that are not significant. This document has been written to meet that direction.

Nature of effects

The amendment is programmatic in nature, consisting of direction that would be applied to future management activities. It does not prescribe site-specific activities on the ground, or irreversibly commit resources. CEQ regulations define *direct effects* as those occurring at the same time and place as the amendment. There are no direct environmental consequences of the amendment; therefore this analysis discusses only *indirect* and *cumulative* effects of the alternatives. Direct effects would result from site-specific projects, and will be evaluated when those decisions are made.

Introduction

In analyzing effects, it's assumed the standards would be met because complying with standards is mandatory. The analysis of effects is based primarily on projections of how future activities and areas would change because of the proposed standards. Such projections are inherently uncertain.

It's also assumed that the objectives generally would be achieved and the guidelines generally followed, though that may not always be true.

The baseline for effects disclosed in this chapter is the existing plans. The effects of existing plans have been previously determined and disclosed. This DEIS describes changes in effects resulting from incorporating lynx conservation measures.

Generally, effects are presented as changes from existing plans, represented by Alternative A. Some effects on lynx are presented by comparing them to Alternative B, the Proposed Action, which was designed to conserve lynx. Cumulative effects include the effects of the existing plans as disclosed in accompanying NEPA documents and incorporated by reference.

Significance of effects

NEPA requires an EIS to be prepared for proposals that significantly affect the quality of the human environment. This document was prepared as a DEIS based on the level of public interest.

The overall effect of the action alternatives is to reduce the likelihood of effects from future projects. This analysis has not identified any environmental effects likely to be significant. This DEIS discloses indirect effects of not taking future actions.

Analysis area

Amendment area

The amendment area includes lynx habitat in the 18 NF's and four BLM units described in Chapter 1. The amendment area includes more than half the lynx habitat in the Northern Rocky Mountains Geographic Area.

More than 50 million acres are inside the amendment area. Of these, about 18,571,000 acres are lynx habitat – see Table 3-1. Almost half of the NF lands, but just one percent of the BLM lands in the amendment area, have been mapped as lynx habitat – see Figure 3-1 and the *Proposed Action* section of Chapter 1 and Appendix B for a discussion of habitat mapping. About 43 percent of lynx habitat in the amendment area is available for development and active management – see Appendix E.

Analysis boundary

Generally, the boundary for evaluating effects, including cumulative effects is lynx habitat in LAUs in the amendment area. This boundary was chosen because for most resources, the effects of the amendment are limited to changes in direction for lynx habitat within the administrative boundaries of the units whose plans are being amended.

The analysis boundaries for economics and for lynx, as well as effects on human communities, are different. See those sections for descriptions of their analysis boundaries.

Some effects were evaluated based on data compiled for administrative units. Appendix K shows the data compiled by administrative unit. This DEIS does not contain data sufficient to develop direction unique to individual units.

Table 3-1. Lynx habitat in the amendment area

	<u>FS</u>	<u>BLM</u>	<u>Total</u>
Amendment area acres	38,530,000	14,830,000	53,360,000
Habitat acres in amendment area	18,470,000	101,000	18,571,000
Habitat percent of agency land	48%	1%	35%
Habitat acres in development allocations ¹	7,940,000	60,000	8,000,000
Percent habitat in development allocations	43%	60%	43%
Habitat acres in non-development allocations ²	10,530,000	41,000	10,571,000
Percent habitat in non-development allocations	57%	40%	57%

¹ *Development land allocations* in existing plans allow *developments* like campgrounds and *active management* like timber sales

² *Non-development land allocations* are places where natural disturbance processes predominate, such as wilderness, roadless and semi-primitive non-motorized areas

Appendix E contains a more complete description of management area categories.

Analysis tools

GIS (Geographic inventory system)

GIS is a computerized mapping tool. GIS layers include:

- ♦ *Lynx habitat maps* – Each unit provided a map of lynx habitat based on vegetative data and snow depths – see Appendix B. Figure 1-1 is a compilation of those maps, used as a base layer for other analysis.
- ♦ *Linkage area maps* – Linkage areas were identified by an interagency group of biologists and state transportation planners, based on the criteria found in Appendix B. Figure 1-1 uses arrows to show the linkage areas. Linkage area maps were used to determine which highways might be affected by the amendment. The resulting map applies to all units in the amendment area.
- ♦ *Management area maps*, which were used to evaluate how much lynx habitat is in developmental and non-developmental or wilderness allocations. These maps apply to all units in the amendment area.
- ♦ *Fire perimeter maps*, which were used to evaluate how much lynx habitat in unsuitable condition exists in FS Region 1. This map applies to all units in FS Region 1 (Hillis et al. 2003).
- ♦ *2000 Census data map*, which identified human structures at a density of one per ten square miles, or 1/6,400. This map was used as a proxy for determining the WUI (wildland urban interface). The WUI was assumed to be the area within one mile of a

structure. This map was used to evaluate the amount and type of lynx habitat in the WUI on the administrative units in Montana (Bush 2003).

FIA (Forest inventory and analysis)

FIA is a systematic collection of vegetative data across the United States, managed by FS Research and Development. FIA data for Montana was used to find the acres of lynx habitat with an abundance of small trees that would be within the reach of snowshoe hares in winter – this information was used as a proxy for winter snowshoe hare habitat. It was used to determine the amount of high- and low-density forests within and outside both wilderness and the WUI (Bush 2003).

Only Montana FIA data was used because it was the only data readily available. FIA data was collected in portions of Idaho last year, but had not been processed in time for this analysis. Montana provides a large sample of the amendment area because it contains about half of the amendment area's lynx habitat. Montana can serve as a surrogate for the entire amendment area, because northern Idaho is similar to western Montana, and southern Idaho, Wyoming and Utah are similar to southeastern Montana.

Typically, models that describe habitat include some quantification of a number of variables to assess how suitable areas are as habitat. Factors known or believed to be important in providing lynx habitat include:

- ♦ Snow depth and condition (fluffy not wet)
- ♦ Stand structure

- ♦ Vegetation type
- ♦ Density of small diameter trees that may provide snowshoe hare forage
- ♦ Availability of large down woody material for dens
- ♦ Stand size
- ♦ Juxtaposition of stands on the landscape

Other factors, such as slope aspect, may also play a role providing habitat for lynx. Knowledge about the quantification and relationships between these variables is limited.

This analysis rests largely on FIA data, which provided only a coarse level of data about Montana, consisting solely of stand structure and stem density. It's simply not possible, given the current level of knowledge, to incorporate the other variables into a model of lynx habitat.

The FIA analysis of hare habitat is most appropriately used as an index to compare relative effects among the alternatives. It does not provide a definitive assessment of how much or of the quality of snowshoe hare habitat. Because the other variables could not be included, the FIA analysis likely overstates the amount and quality of snowshoe hare habitat.

Data by unit

Each NF and BLM unit provided data about its activities in the amendment area and the acres that overlap lynx habitat. Data was provided about precommercial

thinning, grazing allotments, designated and groomed routes, ski areas, special use agreements, minerals and forest roads – see Appendix K. The data was used to evaluate the potential effects on lynx and on each resource.

TSMRS (Timber stand management and resource system)

TSMRS is a computer program developed and used by FS Region 1 to track vegetation management. Each forest is broken down into large stands, and activities are tracked by stand. Such activities include but are not limited to timber harvest, planting, slashing, prescribed burning, reforestation surveys, etc. TSMRS data was used to evaluate the amount of lynx habitat was in unsuitable condition in Montana and to determine the amount of precommercial thinning scheduled during the next decade.

Cumulative effects analysis

Cumulative effects are summarized at the end of each resource section and supported by the information in Appendix L, which gives a description of all past, present and reasonably foreseeable actions in the amendment area. Appendix L also describes which actions are included in the cumulative effects analysis for each resource, and how or why some actions do not affect a particular resource.

Lynx

Analysis information

The analysis of the effects on lynx began with a review of literature related to Canada lynx and snowshoe hare biology, ecology and habitat relationships. Public comments collected during scoping were reviewed to see whether any additional information about lynx was supplied. Personal communications were conducted with FS, BLM and FWS biologists and with researchers investigating lynx and snowshoe hares.

Analysis boundary for lynx

The analysis evaluates the effects of the alternatives on lynx in the amendment area. Cumulative effects on lynx are evaluated for the entire Northern Rockies Geographic Area, an area with unique ecosystems and management histories (Ruediger et al. 2000).

Assumptions

- 1) The analysis of effects is based primarily on projections of changes in future actions because of the proposed standards.
- 2) The lynx habitat maps provided by BLM and FS administrative units were used as the geographic basis for assessing effects in lynx habitat – see the discussion of mapping in the *Proposed Action* section of Chapter 1.

- 3) Except for fire management and snow compaction, the majority of human-related effects on wildlife are in the development land allocations, where such things as ski areas and timber sales are allowed (Hickenbottom et al. 1999). See Appendix E.
- 4) Most effects to species are *short-term*, defined as the ten years from 2003 to 2013. *Long-term* effects are those expected to occur sometime after a decade. This time period was used because it's anticipated the plans subject to this amendment will be revised by 2013.
- 5) The direction provided in existing plans is adequate to provide habitat for species other than lynx. The LCAS provides recommendations to reduce or eliminate risks and provide for lynx habitat needs based on the most comprehensive recent information about threats and risks to conserving lynx.
- 6) Complying with the NFMA requirement to provide habitat for viable populations of lynx will be validated for the selected alternative, using a scientifically credible process and available data, and will be completed between the draft and final EIS.

Biology

Canada lynx are medium-sized forest carnivores occupying northern forests with abundant snowfall. They have long ear tufts, lightweight body frames and very large paws for their size, which act like snowshoes supporting them on top of fluffy snow.

Lynx tend to have very large home ranges, varying from about 15,000 to 30,000 acres or ten to 20 square miles.

They seem to prefer to move through continuous forests, and have been observed to avoid large openings until shrubs and trees provide enough cover to hide them (Ruggiero et al. 2000a; USDI FWS 2003). They tend to be reclusive so many people who've spent a lot of time in the woods in winter have never seen a lynx.

Snowshoe hares are the primary prey of lynx, making up from 35 to 97 percent of the diet (Ruggiero et al. 1994). Red

squirrels may be an important alternate prey, especially when hare populations decline (Koehler 1990; O'Donoghue 1998). Indications are that the summer diet may include a greater variety of prey species (Mowat et al. 2000).

Lynx tend to be less successful hunters than other carnivores, like coyotes and owls, with which they compete. The main cause of lynx mortality is starvation – kittens and young adults both starve to death at high rates if prey – particularly snowshoe hares – is not abundant.

Habitat

Lynx habitat in the amendment area is characterized by abundant moisture, with deep winter snow. Habitat tends to be somewhat drier in the southern and eastern parts of the amendment area.

Lynx habitat includes primarily cool, moist subalpine fir and Engelmann spruce forests, and moist lodgepole pine forests.

Figure 3-1. Lynx photos

Lynx have light body frames



Lynx have big feet that let them walk on top of snow

Cool, moist forests of Douglas-fir, grand fir, western larch and aspen contribute to lynx habitat where intermingled with or adjacent to Engelmann spruce or lodgepole pine. In extreme northern Idaho and in northwestern Montana, cedar-hemlock forests also are considered lynx habitat (Ruggiero et al. 2000a).

Lynx habitat is found generally at mid to upper elevations. Lower elevations range from about 3,500 feet in the north to 7,000 feet in the southern parts of the amendment area.

Lynx use a variety of forest ages and structural stages. They use young regenerating forests and multistoried forests that provide habitat for snowshoe hares. They move through continuous forests, and frequently use ridges, saddles and riparian areas (Koehler 1990; Staples 1995). They use forests with abundant dead and down trees for dens to raise their kittens, especially when denning sites are close to foraging habitat. In the winter, lynx do not appear to hunt in openings, where the lack of cover limits habitat for snowshoe hares.

Lynx habitat is affected by natural disturbances such as fire, and vegetation management such as timber harvest and prescribed fires.

Where lynx occur

About 60 percent of lynx habitat in the lower 48 states occurs in the northern Rockies (USDI FWS 2003); the Northern Rockies Geographic Area likely has the largest lynx population of the five geographic areas defined for lynx. This is

likely due to relatively high quality lynx habitat in large blocks fairly well connected throughout the geographic area and with Canada.

Lynx historically occurred in all four states of the amendment area (Ruggiero et al. 2000a). Their current distribution is more limited and is being studied. Surveys are being conducted in the northern Rockies to further determine lynx occurrence and distribution.

In *Idaho* lynx were never abundant but were distributed throughout northern portion of the state. Recent lynx presence has been documented and lynx continue to be present in north and north-Central Idaho (USDI FWS 2003).

In *Montana*, numerous historic and current lynx records exist in the western part of the state. A reproducing population exists in northwestern Montana – studies of this population began in 1998 and are continuing. In some mountain ranges in southwest Montana, lynx are present but in apparently low numbers where habitat becomes more marginal (more patchy and drier habitats) (USDI FWS 2003).

In Wyoming most historical and recent records of lynx are from the northwestern mountain ranges. A lynx study began in western *Wyoming* in 1996, where a radio-collared female produced four kittens in 1998. Recent snow-track surveys indicated lynx have declined and now are quite rare in northwestern Wyoming (Squires, pers. com.) The decline is likely because the habitat is naturally marginal (more patchy and drier forests) and less capable of supporting snowshoe hares

Lynx

and is further from source populations (USDI FWS 2003).

There are only 10 verified records of lynx in Utah since 1916. In 2002, lynx hair was detected on the Manti-La Sal National Forest in *Utah* – before this, no lynx had been verified in Utah since 1991 most likely because forest habitat in Utah is

remote and far away from source lynx populations (USDA FWS, 2003).

LAU (Lynx analysis unit)

An LAU is an area used to evaluate effects of management activities on individual lynx. It's about the size of a lynx home range, from 15,000 to 30,000 acres or about 25 to 50 square miles.
