

APPENDIX C: 2008 SOUTHERN ROCKIES LYNX AMENDMENT GUIDELINES AND RELEVANT 2001 LYNX CONSERVATION ASSESSMENT STRATEGY CONSERVATION MEASURES

This appendix includes an excerpt from the SRLA Record of Decision (October 2008) and relevant LCAS Conservation Measures to be considered and incorporated in the development and implementation of the Locke Mountain Fuels Management Project.

The following pages outline the current objectives, standards, and guidelines for Vegetation and Fires and Fuels Management activities in lynx habitat on the San Isabel National Forest.

management can influence the diversity within stands and across landscapes, to reduce the probability of repeating the cycle.

Maintaining some degree of management flexibility so that managers are able to influence the development of future forest conditions was an important consideration to me in making this decision. Alternative F was modified to provide additional management flexibility for this purpose. Monitoring of projects that utilize this additional flexibility will yield new information about which treatments are most effective in moving beetle-impacted areas toward the desired future condition.

Purpose and Need for Action

The Purpose and Need for this amendment is to establish management direction that conserves and promotes the recovery of lynx, and reduces or eliminates potential adverse effects from land management activities and practices on national forests in the Southern Rockies, while preserving the overall multiple-use direction in existing Plans.

The Decision

This decision amends eight Land and Resource Management Plans. I have selected Alternative F with modifications of the language for standards VEG S5 and VEG S6. With this decision, the new management direction contained in Alternative F-modified amends the Plans for the Arapaho-Roosevelt, Medicine Bow, Routt, Pike-San Isabel, Rio Grande, San Juan, White River and Grand Mesa, Uncompahgre and Gunnison National Forests to provide consistency throughout the Southern Rocky Mountains Amendment area. The amended Plan language is provided in Attachment 1.

The management direction is designed to strike a reasonable balance in providing for the conservation of lynx habitat while also allowing appropriate levels of human uses to occur. The decision adds one goal, 13 objectives, 7 standards, and 34 guidelines related to all activities (ALL), vegetation management (VEG), grazing management (GRAZ), human uses (HU), and linkage areas (LINK). *Goals* are general descriptions of desired results; *objectives* are descriptions of desired resource conditions; *standards* are management requirements designed to meet the objectives; and *guidelines* are recommended management actions that will normally be taken to meet the objectives, but are not required.

Under this decision, standards are applied only to vegetation management activities that have the potential to directly affect snowshoe hare prey and thus may impact lynx at the population level. Other activities that may have possible adverse effects on individual lynx are subject to guidelines. Any deviations from guidelines would be considered only after analysis of site-specific conditions, and in compliance with Endangered Species Act Section 7 consultation requirements. The application of guidelines will be monitored to verify the assumption that guidelines will be followed in most cases.

The definition of lynx habitat is included in the glossary (see Attachment 1). This decision does not designate lynx habitat, but rather establishes the management direction that will be applied to mapped lynx habitat. Mapping will continue to be refined over time, using the best available information.

Alternative F-modified incorporates the requirements (Terms and Conditions and Reporting Requirements) of the Biological Opinion (USDI Fish and Wildlife Service 2008), and supersedes any requirements specific to lynx that were established under previous Biological Opinions for amended or revised Plans (i.e., Medicine Bow Revised Plan, White River Revised Plan, and Rio Grande MIS Amendment).

The direction given in this decision to promote and facilitate lynx conservation will be reviewed and reconsidered when each Plan is revised, and Plan direction updated as needed to respond to new information and remain consistent with law, regulation and policy.

Rationale for the Decision

Based on the analysis, I have determined that Alternative F-modified contributes to conservation and recovery of lynx, while allowing appropriate levels of other human uses and activities to occur. This decision will allow some possible adverse effects on lynx to occur, for example by exempting fuels treatment projects in the wildland urban interface (WUI) from the required standards on up to 3 percent of lynx habitat by national forest, as well as allowing other exceptions including additional forest thinning (up to 1 percent by LAU) within lynx habitat. By placing certain limits on the activities that could have adverse effects to lynx, this decision will provide for long-term persistence of this species while accommodating other multiple uses.

The following section provides additional explanation for why I selected Alternative F-modified. As an aid to the reader, a side-by-side comparison of the management direction under Alternative B (the Proposed Action, which represents the Lynx Conservation Assessment and Strategy), Alternative F (the FEIS Preferred Alternative), and Alternative F-Modified is provided in Attachment 2.

Vegetation Management

Vegetation management can directly affect lynx habitat, particularly by altering habitat for its primary prey, the snowshoe hare. The amount and quality of snowshoe hare habitat, especially winter habitat, directly affects lynx survival, reproduction, and population persistence.

Objectives for vegetation management

Objectives define the desired conditions for lynx habitat. Four objectives, *VEG O1*, *VEG O2*, *VEG O3*, and *VEG O4* are identified for vegetation management in the context of natural ecological processes. Based on comments on the Draft EIS, the wording of the

objectives under Alternative F was changed slightly to improve clarity, but the intent is the same as in the LCAS.

Standards and guidelines for vegetation management

Standard VEG S1. The intent of this standard is to provide a distribution of stand age classes that would maintain lynx habitat over time (Brittell et al. 1989). The LCAS recommended that if a lynx analysis unit (LAU) (an area approximating the size of the home range of a female lynx) has more than 30 percent of its lynx habitat in a currently unsuitable condition, then vegetation management projects should not move additional acres into a stand initiation stage. Lynx habitat in a currently unsuitable condition includes those forests in a stand initiation structural stage that are not yet tall enough to provide winter snowshoe hare habitat. These conditions are created by stand-replacing wildfires, prescribed burns that remove all of the vegetation, or regeneration timber harvest. The LCAS recommendation is reflected in Alternative B Standard *VEG S1*.

Some people commented that the 30 percent threshold was too high or too low, or should not be constrained to a single LAU.

In lynx habitat, large stand-replacing fires are often the dominant type of disturbance. None of the alternatives change the 30 percent criterion, since we had no basis for a different threshold. Under Alternatives C and D, the standard would apply to a combination of immediately adjacent LAUs. In their comments on the Draft EIS, the U.S. Fish and Wildlife Service favored application of the standard to a single LAU in order to maintain a good distribution of lynx habitat at the scale of a lynx home range.

Alternative F-modified applies the management direction to a single LAU to ensure a variety of structural stages are provided within a home range. This may result in timber harvest being more concentrated in some areas to compensate for area where timber management is deferred to meet this standard. Some changes in wording were made to clarify what is meant by “habitat currently in unsuitable condition” and to apply an exemption for fuels treatment projects within WUI.

Standard VEG S2. The LCAS also recommended that timber harvest not change more than 15 percent of lynx habitat within a decade to an unsuitable condition (i.e., stand initiation structural stage that is too short to provide winter snowshoe hare habitat). The purpose of this standard was to limit the rate of management-induced change in lynx habitat.

This criterion has only rarely been exceeded in the past. Standard *VEG S2* was changed to Guideline *VEG G6* in Alternative C and dropped as a standard or guideline in Alternative D. However, the U.S. Fish and Wildlife Service expressed concerns that dropping Standard *VEG S2* could appreciably reduce the amount of lynx habitat in a short period of time and allow negative effects to accumulate.

Based on these comments, Standard *VEG S2* was retained in Alternative F-modified. The standard was reworded to clarify that it only applies to timber management

practices that regenerate the stand (clearcut, seed tree, shelterwood, and selection harvests), and to add an exemption for fuels treatment within WUI. This standard is not expected to have any effect on timber harvest.

Standard VEG S5. The LCAS recommended no precommercial thinning within lynx habitat since it directly impacts winter snowshoe hare habitat.

Some people suggested that this standard should apply to all vegetation management projects, since activities such as fuel treatments or prescribed burning could also reduce horizontal cover. Others suggested that precommercial thinning should be allowed, using an adaptive management approach, where it could be done to promote or prolong winter snowshoe hare habitat.

In Alternative F-modified, Standard *VEG S5* applies to precommercial thinning, which is the predominant activity in young regenerating forests that has a direct effect in reducing winter snowshoe hare habitat (Ruggiero et al. 2000, USDI Fish and Wildlife Service 2000a, 2000b, 2003). Fuels treatment projects within WUI would be exempt from compliance with Standard *VEG S5*, which could affect up to 3 percent of lynx habitat by national forest. Precommercial thinning would be allowed adjacent to administrative sites, dwellings, or outbuildings, for research and genetic tests, and to restore aspen where it is in decline. This is estimated to have cumulatively little effect on lynx habitat.

In addition, precommercial thinning would be allowed to occur up to the historical 1995-99 levels, which was analyzed for Alternative A. This additional flexibility to allow precommercial thinning using modified techniques is needed to explore methods for influencing stand development in the aftermath of the mountain pine beetle epidemic. The need for precommercial thinning is expected to increase over the next 15-20 years as an expected wave of new regeneration in areas currently experiencing high levels of tree mortality reaches critical size and density. New thinning methods will be tried, to determine which best meet the aims of sustaining snowshoe hare and lynx habitat, while also improving stand composition and growth.

The various types of thinning allowed under the exceptions are anticipated to have some adverse effects on lynx. However, the overall amount of impact under Alternative F-modified will be limited. In their 2003 Remand Notice, the U.S. Fish and Wildlife Service concluded that the effects of timber harvest, precommercial thinning and fire suppression in the Southern Rocky Mountains constituted a low magnitude threat to lynx, in part because a relatively small amount of activity occurred during the period prior to listing.

In their Biological Opinion (2008), the U.S. Fish and Wildlife Service identified non-discretionary terms and conditions (T&C) to minimize the potential for incidental take as a result of the exceptions under *VEG S5*. T&C 1 limits the total area subject to the exemptions and exceptions to no more than 4.5 percent (3 percent for WUI and 1.5 percent for other exceptions). Under T&C 2, exceptions for research and to restore aspen

are not allowed in any LAU in which VEG S1 is exceeded (that is, more than 30 percent of the LAU is in the stand initiation stage). Furthermore, precommercial thinning in LAUs in which VEG S1 is exceeded is limited to areas that do not yet provide snowshoe hare habitat. These requirements were incorporated into Alternative F-modified.

Standard VEG S5 does not apply to non-lynx habitat such as ponderosa pine and climax lodgepole pine. Within lynx habitat, precommercial thinning has occurred primarily in lodgepole pine stands that are seral to spruce-fir, and to a lesser extent in spruce-fir, Douglas-fir, white fir and occasionally aspen stands. With the exception provided under Alternative F-modified, historical levels of thinning could be continued, using modified techniques. No change in annual timber outputs is expected, although this standard may influence what material is harvested and where.

Standard VEG S6. The LCAS (as updated in 2004) recommended providing habitat conditions through time to support winter snowshoe hare habitat in multistory forests. Multistory forest structures can develop from natural processes, such as wildfire or insects and diseases, or from management actions like timber harvest that create small openings where young trees and shrubs can become established and grow.

In their comments, some people said the management direction should preclude all activities that reduce winter snowshoe hare habitat in multistory forest. Recent research in northwest Montana and southern Colorado demonstrated that mature multistory forests provide important winter snowshoe hare habitat that may support higher hare densities than younger regenerating stands (Squires and Ruggiero 2007, Shenk 2007).

Compared to Alternatives C and D, Alternative F provides stronger protection for multistory forest conditions. Alternative F-modified provides clarification that the emphasis is on sustaining winter snowshoe hare habitat, and that uneven-aged management practices will be employed to maintain and encourage desired habitat attributes. Within WUI, fuels treatment projects would be exempt from this standard. In their Biological Opinion (USDI Fish and Wildlife Service 2008), non-discretionary terms and conditions (T&C) were identified to minimize the potential for incidental take as a result of the exemptions and exceptions. T&C 1 limits the total area subject to the exemptions and exceptions to no more than 4.5 percent (3 percent for WUI and 1.5 percent for other exceptions). Under T&C 2, exceptions for research and for uneven-aged management are not allowed in any LAU in which VEG S1 is exceeded (that is, more than 30 percent of the LAU is in the stand initiation stage). These requirements were incorporated into Alternative F-modified.

Uneven-aged management may shift species composition to a greater proportion of subalpine fir, which is a less desirable species for wood fiber production. Overall, however, Alternative F-Modified would allow a moderate to high level of flexibility to achieve timber management objectives on suitable timber lands, and to respond to insect and/or disease concerns.

Standard *VEG S6* is an important component of management to sustain lynx habitat. Reductions in winter snowshoe hare habitat would be allowed for activities within 200 feet of structures, for research or genetic tests, for incidental removal during salvage harvest, and for uneven-aged management practices that are employed to maintain and encourage multistory attributes of the stand, which would be expected to have only minor effects.

Guideline VEG G1. The LCAS included a guideline to encourage vegetation management practices that would improve lynx foraging habitat (i.e., winter snowshoe hare habitat) where it is currently lacking, in proximity to denning habitat.

There was little public comment concerning this guideline. Under Alternative F-modified, the intent was retained. The wording was changed to clarify that lodgepole pine stands with little understory currently, and where snowshoe hare habitat can be improved, should be priority areas for treatment to enhance habitat conditions.

Guideline VEG G11. During the first few months of life, denning habitat must be available throughout the home range to give kittens an escape route from predators and cover from the elements. The most important feature of denning habitat is large woody debris: typically piles of wind-thrown trees, root wads, or large downed trees. The LCAS recommended two standards and two guidelines related to denning habitat, which are reflected under Alternative B as Standards *VEG S3 and VEG S4* and Guidelines *VEG G2 and VEG G3*.

Some people commented that the agency should allow more flexibility by recognizing that denning habitat can be created through timber harvest practices. Some disagreed with a requirement to retain at least ten percent denning habitat, and others thought more should be required. Some people proposed that all old growth be protected to provide denning habitat. Some people said that all salvage harvests should be deferred.

Some new information about lynx denning habitat became available after the DEIS was prepared. In Colorado, Merrill and Shenk (2006) reported that 20 dens were found on steep slopes in the Engelmann spruce/subalpine fir zone at an average elevation of about 11,000 ft. Most were located in forest stands, but five were located near tree line along rock and boulder fields. In various other studies, lynx denning habitat was found in a variety of forest structural stages, from young regenerating forests to old forests.

Habitat mapping indicates that 20 to 40 percent of most LAUs currently provide denning habitat. Furthermore, denning habitat will be maintained in areas managed for old growth forest characteristics and in non-developmental land allocations. This information, combined with the research showing a lynx use of a greater variety of habitat for denning, indicates that denning habitat is not expected to be a limiting factor for lynx in the Southern Rockies Lynx Amendment area.

However, it is still advisable for vegetation management practices to consider the abundance and distribution of denning habitat in project design, and to retain or create habitat components (piles of down wood, or standing dead trees) in areas where it is

found to be lacking. Under Alternative F, some guidance for denning habitat was retained but simplified into Guideline *VEG G11*. No effects on forest health or timber harvest are expected due to this guideline.

Fire and Fuels Management

With the exception of objective *VEG O3*, which specifically addresses wildland fire use, the vegetation objectives, standards and guidelines do not apply to wildfire suppression or wildland fire use. *VEG O3* encourages fire use activities that would restore ecological processes and maintain or improve lynx habitat.

After the 2000 wildfire season that burned substantial acreage of forested land, the Forest Service reviewed and refined the agency's goals and priorities for wildland fire management (USDA Forest Service 2001). Priority for selection of hazardous fuel treatment projects on National Forest System lands in collaboration with Federal, State, and other agencies, as well as Tribes and communities, generally is as follows:

- (1) Closest proximity to communities at risk in the Wildland Urban Interface (WUI);
- (2) Strategic areas outside the WUI that prevent wildland fire spread into communities or critical infrastructure;
- (3) Areas outside of WUI that are in Condition Classes 2 or 3; and
- (4) Other considerations.

Lynx habitat consists of high-elevation spruce/fir and lodgepole pine forests and may include some mesic mixed-conifer forests. Generally, these areas have not been affected to any large degree by fire exclusion, in contrast to lower-elevation and dryer forests with shorter fire return intervals. However, some existing stands may be susceptible to extreme fire behavior because of high incidences of insect and disease-caused tree mortality or the amount of tree limbs that provide ladder fuels. Lynx habitat may also occur in WUI.

Standards and guidelines related to fuels treatments

Most lynx habitat is currently in Condition Class 1, meaning large, stand-replacing fires occur infrequently, every 100 to 200 years, in these forests. Fire is a natural process in these ecosystems, but some of these Condition Class 1 forests can still pose a threat to communities.

Many comments were received on the Draft EIS and Supplemental Draft EIS regarding fuels treatments. Some people suggested there be no exemptions for fuels treatments. Several groups suggested that only fuels treatments near human residences and other structures be allowed, because these areas are generally not appropriate for lynx habitat anyway. Some said the agencies should define WUI more specifically. Others liked the exemptions as they were written in Alternative D.

The U.S. Fish and Wildlife Service cautioned against exempting a broad range and unknown number of actions from Plan direction. They felt that the exemption, as

worded in Alternative D, was too vague to assure an adequate analysis of potential effects upon lynx or lynx habitat, and could result in adverse effects to lynx.

After reviewing the public comments, national direction regarding fuels treatments, and analysis of the effects on lynx, I decided to modify the fuels treatment exemption. The intent is to allow fuels treatments to reduce the hazard to communities, while continuing to provide for the conservation of lynx in the Southern Rockies.

Exemption to VEG S1, S2, S5 and S6. Under Alternative F-Modified, fuels treatment projects within the WUI as defined by the Healthy Forest Restoration Act (HFRA) are exempt from the vegetation standards, up to a certain limit. HFRA describes WUI as generally being ½ mile to 1 ½ miles in width (see Attachment 1, p. 15, Glossary). Our analysis showed that about three percent of lynx habitat falls within one mile of communities in the Southern Rockies Lynx Amendment area. In the Final EIS, each forest's five-year fuels treatment program was reviewed, and we found that a cap of three percent would accommodate all identified fuels treatments needs. Therefore, under Alternative F-modified, up to three percent of the total lynx habitat on a National Forest (administrative unit) is exempt from adhering to the vegetation standards.

The cap limits the overall amount of lynx habitat that would be impacted to a small percentage. Nevertheless, the exemption could result in local adverse effects on lynx. The U.S. Fish and Wildlife Service recommended that fuel treatment projects should not result in more than three adjacent LAUs exceeding the standard. This was incorporated into the management direction (see Attachment 1).

Guideline VEG G10. Guideline *VEG G10* was added to Alternative F-modified, which says fuels treatment projects within the WUI should be designed *considering* Standards *VEG S1, S2, S5, and S6*. The intent in adding this guideline is to recognize that while these vegetation standards are not required for fuels treatment projects within the WUI, in many cases projects can be designed to reduce hazardous fuels while still providing for lynx needs. This guideline ensures lynx are considered in the project design, but allows flexibility in situations where implementing the standards would otherwise prevent the project from meeting hazardous fuels objectives in the WUI.

Summary for Vegetation Management: The vegetation management direction set forth in Alternative F-modified focuses on conserving the most important components of lynx habitat: a mosaic of young and mature multistory forests with high levels of horizontal cover and coarse woody debris. These components will sustain lynx habitat and the snowshoe hare prey base across all seasons. The standards will be applied for all vegetation management actions in lynx habitat, with exceptions that may be applied on less than 5 percent of lynx habitat. Collectively, application of the standards for vegetation management is expected to minimize adverse effects on lynx and promote the survival and recovery of lynx populations.

The standards and guidelines place some limits on timber harvest and thinning that may reduce Long Term Sustained Yield by 0 to 6 percent by forest. Annual timber

outputs would not change, although there may be changes in what material is harvested and where.

Fuels treatments in the WUI would not have to comply with the vegetation standards, up to a cap of three percent of lynx habitat by national forest. This will accommodate all identified fuels treatment needs.

Livestock Grazing Management

Livestock grazing could have local effects on lynx foraging habitat in areas that grow quaking aspen and willow in riparian areas. Local impacts could affect individual lynx. However, no information exists to indicate that grazing poses a threat to overall lynx populations (USDI Fish and Wildlife Service 2003, p. 40083). In addition, appropriate grazing management can rejuvenate and increase forage and browse in key habitats.

The LCAS recommended four standards for grazing management. These are reflected in Alternative B. Standards *GRAZ S1*, *GRAZ S2*, *GRAZ S3*, and *GRAZ S4* provide management direction for grazing in fire and harvest-created openings, aspen stands, riparian areas and willow carrs, and shrub-steppe habitat.

Many people who commented on Alternative D, the preferred alternative in the Draft EIS, said the guidelines should be changed to standards in the final alternative. Some said the grazing guidelines should be retained. Some people recommended that grazing should not be allowed at all.

Guidelines GRAZ G1, G2, G3 and G4. Under Alternative F-modified, the management direction for grazing is in the form of guidelines. These guidelines provide project design criteria for managing grazing in fire and harvest-created openings, aspen, willow, riparian areas, and shrub-steppe habitats. For the most part, existing direction and current practices provide equivalent guidance. Therefore amending the Plans to incorporate these guidelines would have only minimal direct or indirect effects on current livestock grazing on NFS lands.

Recreation Management

Over-the-snow winter recreation

Lynx have very large feet relative to their body size, providing them with a competitive advantage over other carnivores in deep snow. The LCAS recommended two objectives and two standards relating to winter dispersed recreation, which are reflected under Alternative B as Objectives *HU O1* and *HU O3*, and Standards *HU S1* and *HU S3*. All alternatives contain Objectives *HU O1* and *HU O3* that discourage expansion of snow-compacting human activities. All alternatives would allow existing special use permits and agreements to continue.

In comments on the Draft EIS, some people said they thought allowing no net increase in groomed or designated routes was insufficient, and asked that no dispersed over-the-

2001 LCAS Conservation Measures Specific to Timber Lynx Habitat

The 2008 SRLA supersedes the 2001 LCAS, however, the 2001 LCAS remains an important reference document for management activities occurring in lynx habitat. The following Conservation Measures were initially considered in the development of the Proposed Project.

Programmatic Planning – Objectives

1. Evaluate historical conditions and landscape patterns to determine historical vegetation mosaics across landscapes through time. For example, large infrequent disturbance events may have been more characteristic of lynx habitat than small frequent disturbances.
2. Maintain suitable acres and juxtaposition of lynx habitat through time. Design vegetation treatments to approximate historical landscape patterns and disturbance processes.
3. If the landscape has been fragmented by past management activities that reduced the quality of lynx habitat, adjust management practices to produce forest composition, structure, and patterns more similar to those that would have occurred under historical disturbance regimes.

Project Planning – Objectives

1. Design regeneration harvest, planting, and thinning to develop characteristics suitable for snowshoe hare habitat.
2. Design project to retain/enhance existing habitat conditions for important alternate prey (particularly red squirrel).

Project Planning – Standards

1. Management actions (e.g., timber sales, salvage sales) shall not change more than 15 percent of lynx habitat within a LAU to an unsuitable condition within a 10-year period.
2. Following a disturbance, such as blowdown, fire, insects/pathogens mortality that could contribute to lynx denning habitat, do not salvage harvest when the affected area is smaller than 5 acres. Exceptions to this include:
 - a) Areas such as developed campgrounds;
 - b) LAUs where denning habitat has been mapped and field validated (not simply modeled or estimated), and denning habitat comprises more than 10 percent of lynx habitat within a LAU; in these cases, salvage harvest may occur, provided that at least the minimum amount is maintained in a well-distributed pattern (see glossary).
3. In lynx habitat, pre-commercial thinning will be allowed only when stands no longer provide snowshoe hare habitat (e.g., self-pruning processes have eliminated snowshoe hare cover and forage availability during winter conditions with average snowpack).
4. In aspen stands within lynx habitat in the Cascade Mountains, Northern Rocky Mountains and Southern Rocky Mountains Geographic Areas, apply harvest prescriptions that favor regeneration of aspen.

Project Planning – Guidelines

1. Plan regeneration harvests in lynx habitat where little or no habitat for snowshoe hares is currently available, to recruit a high density of conifers, hardwoods, and shrubs preferred by hares. Consider the following:
 - a) Design regeneration prescriptions to mimic historical fire (or other natural disturbance) events, including retention of fire-killed dead trees and coarse woody debris;

- b) Design harvest units to mimic the pattern and scale of natural disturbances and retain natural connectivity across the landscape. Evaluate the potential of riparian zones, ridges, and saddles to provide connectivity; and
 - c) Provide for continuing availability of foraging habitat in proximity to denning habitat.
2. In areas where recruitment of additional denning habitat is desired, or to extend the production of snowshoe hare foraging habitat where forage quality and quantity is declining due to plant succession, consider improvement harvests (commercial thinning, selection, etc). Improvement harvests should be designed to:
 - a) Retain and recruit the understory of small diameter conifers and shrubs preferred by hares;
 - b) Retain and recruit coarse woody debris, consistent with the likely availability of such material under natural disturbance regimes; and
 - c) Maintain or improve the juxtaposition of denning and foraging habitat.
 3. Provide habitat conditions through time that support dense horizontal understory cover, and high densities of snowshoe hares. This includes, for example, mature multi-storied conifer vegetation in the west and patches of aspen with dense conifer understory in the east. Focus vegetation management, including timber harvest and use of prescribed fire, in areas that have potential to improve snowshoe hare habitat (dense horizontal cover) but that presently have poorly developed understories that have little value to snowshoe hares.

Conservation Measures Specific to Wildfire Management in Lynx Habitat

Programmatic Planning – Objectives

1. Restore fire as an ecological process. Evaluate whether fire suppression, forest type conversions, and other forest management practices have altered fire regimes and the functioning of ecosystems.
2. Revise or develop fire management plans to integrate lynx habitat management objectives. Prepare plans for areas large enough to encompass large historical fire events.
3. Use fire to move toward landscape patterns consistent with historical succession and disturbance regimes. Consider use of mechanical pre-treatment and management ignitions if needed to restore fire as an ecological process.
4. Adjust management practices where needed to produce forest composition, structure, and patterns more similar to those that would have occurred under historical succession and disturbance regimes.
5. Design vegetation and fire management activities to retain or restore denning habitat on landscape settings with highest probability of escaping stand-replacing fire events. Evaluate current distribution, amount, and arrangement of lynx habitat in relation to fire disturbance patterns.
6. In the Great Lakes Geographic Area, restore tree species composition and structure so that fire can be returned to the ecosystem where feasible.

Project Planning – Objectives

1. Use fire as a tool to maintain or restore lynx habitat.
2. When managing wildland fire, minimize creation of permanent travel ways that could facilitate increased access by competitors.

Project Planning – Standards

1. In the event of a large wildfire, conduct a post-disturbance assessment prior to salvage harvest, particularly in stands that were formerly in late successional stages, to evaluate potential for lynx denning and foraging habitat.
2. Design burn prescriptions to regenerate or create snowshoe hare habitat (e.g., regeneration of aspen and lodgepole pine).

Project Planning – Guidelines

1. Design burn prescriptions to promote response by shrub and tree species that are favored by snowshoe hare.
2. Design burn prescriptions to retain or encourage tree species composition and structure that will provide habitat for red squirrels or other alternate prey species.
3. Consider the need for pre-treatment of fuels before conducting management ignitions.
4. Avoid constructing permanent firebreaks on ridges or saddles in lynx habitat.
5. Minimize construction of temporary roads and machine fire lines to the extent possible during fire suppression activities. Design burn prescriptions and, where feasible, conduct fire suppression actions in a manner that maintains adequate lynx denning habitat (10% of lynx habitat per LAU).

Source: Ruediger et. al. 2000

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