Canada Lynx Habitat Inventory-
Upper Columbia-Salmon
Clearwater District, Idaho
Final Report

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INTRODUCTION

The Canada lynx (*Lynx canadensis*) is a wide ranging forest carnivore. Large feet and long legs distinguish the medium-sized cat as a species that is highly adapted to travel in deep soft powdery snow characteristic of the boreal and western montane and subalpine regions of North America. Lynx is a specialized predator and uses environments dominated by coniferous or mixed coniferous-deciduous forest with dense undergrowth, but may also utilize open forest, rocky areas, and tundra to forage for abundant prey (Groves et al. 1997; Ruediger et al. 2000).

In Idaho lynx are predicted to occur in montane and subalpine coniferous forest habitats (at generally > 4,000 ft. elevation) as far south in the west as the northern Salmon River and Lemhi mountains and east and south on the Yellowstone Highlands and Caribou Range (McKelvey 2000; Wisdom et al. 2000). Several lynx occurrences are known from the Coeur d'Alene River, St. Joe River, and St. Maries River basins (Idaho Conservation Data Center 2004). Additional references on the occurrence, ecology, and conservation of lynx in Idaho include Clark et al. (1989); Idaho Conservation Effort (1998); Koehler and Aubry (1994); Koehler and Hornocker (1979); Lewis and Wenger (1998); Rust (1946); and Terra-Berns et al. (2000). Gaines et al. (2000) and Carrol et al. (2001) provide recent insight to issues concerning lynx habitat conservation planning.

Lynx are specialized to prey primarily on snowshoe hare (*Lepus americanus*), but red squirrels may also become an important prey source particularly when snowshoe hare populations are reduced (Ruediger et al. 2000). Thus lynx foraging and denning habitat selection is closely tied to the distribution and quality of snowshoe hare cover and forage habitats. Primary habitat features influencing lynx-snowshoe hare habitat occur in a range of mixed stand ages which includes regeneration of disturbed stands and late-seral forests. This array of contiguous stand ages is more than likely essential for lynx to persevere by providing adequate habitat for hares and denning (RMRScience 2000).

Lynx home range size and population densities vary with the abundance of prey. Population densities are usually < 0.25 lynx per square mile. In western North America home range sizes have been estimated as 15 to 147 square miles (Groves et al. 1997; Ruediger et al. 2000; Ruggiero et al. 2000). Washington State Department of Natural Resources (1996) and Quade (1999) identify 3 primary habitat components for lynx in the Pacific Northwest: (1) foraging habitats that support snowshoe hare and provide hunting cover, (2) denning sites, and (3) dispersal/travel cover. Ruediger et al. (2000) provides a revised approach to lynx habitat classification. In this approach habitat is either suitable or unsuitable. Suitable habitats include denning, forage-high, and forage-low. Bureau of Land Management (BLM) and USDA Forest Service currently use this classification revised by Ruediger et al. (2000) (Box 1).

The US Fish and Wildlife Service (USFWS) listed lynx as threatened in March 2000 (U. S. Fish and Wildlife Service 2000 and see U. S. Fish and Wildlife Service 1994, 1997, 1998, 1999). USDI Bureau of Land Management and US Fish and Wildlife Service (2000) and Ruediger et al. (2000) recognize habitat inventory and monitoring as important contributions to the conservation of lynx. The objective of this study is to delineate and describe suitable lynx habitats on Bureau of Land Management (BLM) lands within lynx analysis units (LAUs) on the Upper Columbia-Salmon Clearwater District of northern Idaho. The study is ongoing. In 2000, work was completed in the upper Latour and West Fork Pine Creek drainages (Rust 2000). In 2001, work was completed in the Pine Creek drainage (Rust 2002). In August 2002, work was completed in Ahrs Canyon, upper Rochat Creek, and upper Street Creek drainages within St. Joe River Basin (Rust and Miller 2003). In late July and early August of 2003, work was completed in West Fork of Pine Creek, Mt. Wiessner, Fortynine Meadows, and along established Ridgetrail 52 between Orphan Pt. and Breezy Pt., which passes across Lookout Mountain (Miller and Rust 2004). The final year (2004) of this project was focused on enhancing the interpolation of lynx habitat throughout LAUs already visited.

General definition of lynx habitat: sites capable of maintaining ≥ 180 trees per acre (tpa) or ≥ 70 percent canopy cover of mature trees, with (in either case) tree foliage extending at least 3.3 feet above the mean annual average snow depth.

Lynx habitat components:

Lynx Conservation Assessment and Strategy (LCAS)			WDNR	Descriptions
Lynx habitat	Denning		Denning habitat	Habitat used during parturition and rearing of young until they are mobile. The component appears to be large amounts of course and woody debris, either down logs or root wads. Course woody debris provides escape and thermal cover for kittens. Denning habitat may be found either in older mature forest of conifer or mixed conifer/deciduous types, or in regenerating stands (>20 years since disturbance), Denning habitat must be located within daily travel distance of foraging habitat (typical maximum daily distance for females is 3-6 miles).
	Forage	High quality	Forage habitat	Habitat that supports primary prey (snowshoe hare) and/or important alternate prey (especially red squirrels) that are available to lynx. The highest quality snowshoe hare habitats are those that support a high density of young trees or shrubs (>4500 stems or branches per acre), tall enough to protrude above the snow. These conditions may occur in early successional stands following some type of disturbance, or in older forests with a substantial understory of shrubs and young conifer trees. Course woody debris, especially in early successional stages (created by harvest regeneration units and large fires), provides important cover for snowshoe hares and other prey. Red squirrel densities tend to be highest in mature cone-bearing forests with substantial quantities of course woody debris.
		Low quality	Travel habitat	Forested habitats that provide limited snowshoe hare forage habitat and limited denning habitat. Tree canopies are at least 3.3 feet taller than the average snow depth. Tree canopies provide ≥ 70 percent cover.
	Currently unsuitable		Temporary non-lynx habitat	Areas within identified/mapped lynx habitat that are in early successional stages as a result of recent fires or vegetation management, in which the vegetation has not developed sufficiently to support snowshoe hare populations during all seasons. Management-created openings would likely include clearcut and seed tree harvest units, and might include shelterwood and commercially-thinned stands depending on size and remaining stand composition and structure.
Non lynx habitat			Non-lynx habitat	Areas such as lakes, low elevation ponderosa pine forest, and alpine tundra that do not support snowshoe hare populations and are not considered to be capable of providing lynx habitat.

Box 1. Classification of lynx habitats. Lynx habitats identified by Washington Department of Natural Resources (1996) (WDNR), Ruggiero et al. (2000), Quade (1999), and Ruediger et al. (2000) (LCAS) are summarized.

Table 1. Summary of vegetation covertype classification. Vegetation covertype classes occurring within the lynx analysis units on Upper Columbia-Salmon Clearwater District are listed by map unit code and with percent of occurrence. Covertypes are classified as suitable lynx habitat (S); unsuitable, temporary non-lynx habitat (U); or unsuitable, non-lynx habitat (N). Data are drawn from Landscape Dynamics Lab (2002). The covertype classification is modified from Landscape Dynamics Lab (2002).

Map Code	Covertype Name	Suitability	Percent
3101	Foothills Grassland	N	< 0.1
3104	Montane Parklands and Subalpine Meadows	N	1.8
3202	Warm Mesic Shrubland	U	4.4
4102	Broadleaf Forest	N	< 0.1
4201	Engelmann Spruce (>66 percent cover)	S	2.9
4203	Lodgepole Pine (> 66 percent cover)	S	7.0
4204	Mountain Hemlock (> 60 percent cover)	S	
4206	Ponderosa Pine (> 66 percent cover)	N	0.5
4207	Grand Fir (> 66 percent cover)	S	3.3
4208	Subalpine Fir (> 66 percent cover)	S	6.8
4210	Western Red Cedar (> 66 percent cover)	S	2.0
4211	Western Hemlock (> 66 percent cover)	S	3.3
4212	Douglas-fir (> 66 percent cover)	N	7.3
4215	Western Larch (> 66 percent cover)	N	3.2
4220	Mixed Subalpine Forest (subalpine fir, mountain hemlock, Douglas-fir, Engelmann spruce, lodgepole pine)	S	8.2
4221	Mixed Mesic Forest (western redcedar, western hemlock, Douglas-fir, Engelmann spruce, western larch, grand fir, lodgepole pine, western white pine)	S	21.2
4222	Mixed Xeric Forest (ponderosa pine, Douglas-fir, lodgepole pine)	N	0.6
4223	Douglas Fir-Lodgepole Forest (> 80 percent cover)	S	2.1
4225	Douglas-fir-Grand Fir Forest (> 80 percent cover)	S	10.3
4226	Western Red Cedar-Grand Fir Forest (> 80 percent cover)	S	3.2
4227	Western Red Cedar-Western Hemlock Forest (> 80 percent cover)	S	0.5
4228	Western Larch-Lodgepole Forest (> 80percent cover)	S	3.0
4229	Western Larch-Douglas-fir Forest (> 80 percent cover)	S	4.8
4233	Mountain Hemlock-Subalpine Fir (> 80 percent cover)	S	
4301	Mix Needleleaf/Broadleaf Forest	S	0.1
5000	Water	N	< 0.1
6101	Needleleaf Dominated Riparian (> 66 percent relative cover)	S	0.8
6102	Broadleaf Dominated Riparian (> 66 percent relative cover)	N	< 0.1
6103	Needleleaf-Broadleaf Riparian Forest (> 25 percent and < 66 percent broadleaf, > 25 percent and < 66 percent needleleaf relative cover)	S	< 0.1
6104	Mixed Riparian (forest and non-forest)	S	0.2
6201	Graminoid and Forb Dominated Riparian (<15percent total shrub cover)	N	< 0.1
6202	Shrub Dominated Riparian	U	0.2
6203	Mixed Non-Forest Riparian	U	0.1
7300	Exposed Rock (talus)	N	1.3
7800	Mixed Barren Land	N	0.5

METHODS

The study area encompasses BLM lands within the following lynx analysis units: Bitterroot Divide south, Freezeout, Grandmother Mountain, Latour Creek, Lost Rocket, Marble Mountain, Pine Creek, St. Joe Divide West, St. Joe Divide east, and Upper Fishhook. This area occurs within the Coeur d'Alene River, St. Joe River, and St. Maries River basins, east of Coeur d'Alene, Idaho.

We conducted lynx habitat field inventory work in stands targeted as suitable using (1) criteria summarized by Washington State Department of Natural Resources (1996), Ruggiero et al. (2000), and Quade (1999) (Box 1) and (2) vegetation maps prepared by Upper Columbia-Salmon Clearwater District (2000) and Landscape Dynamics Lab (2002). Lynx habitat field determinations were crosswalked from the Washington State Department of Natural Resources (1996) classification system to the more recent classification of Ruediger et al. (2000) using the convention shown in Box 1. Vegetation covertype mapping units are classified using the system identified by Landscape Dynamics Lab (2002) (Table 1).

We used both stand level and fixed area sampling techniques to document the composition and structure of targeted stands. Stand level point observation data are intended to rapidly accumulate a large number of geographically-referenced points where knowledge of the vegetation is linked to base environmental data such as elevation, slope aspect, and slope gradient. On a walking route through an area selected for study, data on the plant association, ecological condition, seral status, and the physical environment are collected. New data are collected as a new plant association is encountered or with any significant change in the environmental parameters (slope, aspect, elevation), structural condition, seral status, or ecological condition. Quantitative composition and structure data were collected on 0.1 acre plots using the methods of Bourgeron et al. (1991) and USDA Forest Service (1992). We used conventions modified from Hall et al. (1995) to classify forest stand structural condition and seral status. Geographical positioning system data were collected for plot locations using a Garmin navigation grade unit.

The focus of field reconnaissance was to inventory lynx habitat on BLM lands. The condition and status of lynx habitats on adjacent lands (not managed by the BLM) may, however, influence management on Bureau lands. For this reason, an effort is made to interpolate results across entire LAUs. Interpolation of habitat conditions was conducted using vegetation coverages for the area (Upper Columbia-Salmon Clearwater District 2000; Landscape Dynamics Lab 2002), Landsat TM imagery, digital ortho-photography, general patterns in the environmental distribution of sampled habitats, panoramic photographic series, and reconnaissance field notes.

RESULTS

Lynx habitat field inventories for 2000 through 2004 field seasons occurred in the following LAU's: Freezeout, Grandmother Mountain, Latour Creek, Lost Rocket, Marble Mountain, Pine Creek, St. Joe Divide West, and Upper Fishhook. For purposes of discussion specific areas are outlined in detailed summaries, within the results section, of the report. The detailed summaries are in sequential order. The cumulative extent of stands visited during the 2000 through 2004 field seasons is shown in Figures 1 and 2. A thorough summary of 2000 through 2004 field inventories is provided in Appendix 2.

Table 2 shows the percentage of lynx habitat types observed in lynx analysis units visited for the 2000 through 2004 field seasons. Suitable lynx habitat types classified as forage-low and forage-high were the most abundant observed. Suitable lynx habitat types classified denning were the least. Latour Creek, Lost Rocket, and Pine Creek LAU's have the highest percentage of currently unsuitable lynx habitat which is equivelant to temporary non-lynx. Figures 6 through13 are photographs depicting lynx denning, forage-high, and forage-low habitat types.

Additional information on stand composition and structure was acquired through the use of georeferenced

photo-points. Field observations and information provided by Upper Columbia-Salmon Clearwater District (2000) and Landscape Dynamics Lab (2002) were combined to interpolate the occurrence of lynx habitats within the following LAU's; Freezeout, Grandmother Mountain, Latour Creek, Lost Rocket, Marble Mountain, Pine Creek, St. Joe Divide West, and Upper Fishhook. The cumulative extent of lynx habitats interpolated through 2000 and 2004 field work is shown in Figures 3,4, and 5. Vascular plant species observed within the study area during the 2000 through 2004 field seasons are listed in Appendix 3. Appendix 4 lists moss, lichen and liverwort species observed during the 2004 field inventory.

Following are more detailed summaries of the 2000 through 2004 field seasons sampled areas:

2000 Field Season:

Lynx habitat field inventories occurred in the upper Latour Creek, West Fork Pine Creek, and Hunter/Calusa Creek drainages within the Couer d'Alene River Basin during July 26 – August 4 and August 22 – August 25, 2000. The areas are located within the Latour Creek and Pine Creek LAU's. Eighty-six plots (including both stand level point observation and fixed area ecology plots) were located in 27 plant associations that total (approximately) 3230.00 acres.

Snowshoe hare browse was observed on numerous plots located within the upper Latour Creek, West Fork Pine Creek, and Hunter/Calusa Creek drainages. Snowshoe hare winter browse was most frequently observed on *Salix scouleriana,* but also occurred on *Holodiscus discolor* (ocean spray)*, Acer glabrum* (Rocky Mountain maple) and *Pinus contorta* (lodgepole pine).

Latour Peak area summary: Thirty-two stands were sampled in the 2000 field season. The area is predominately suitable lynx habitat classified as forage-high (using conventions of Ruediger et al. (2000); see Box 1).

Fourteen plant associations were sampled in the Latour Peak area. *Tsuga mertensiana/Xerophyllum tenax,* (mountain hemlock/beargrass) *Xerophyllum tenax* and *Tsuga mertensiana/Menziesia ferruginea* (rusty menziesia)*, Xerophyllum tenax* were most frequently observed, and were sampled in 4 stands each. *Tsuga mertensiana/Xerophyllum tenax, Luzula hitchcockii* (Hitchcock's smooth woodrush) was the next most frequently observed and sampled in 3 stands. The remaining associations were sampled once or twice.

Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax occurs on moderate steep slopes of southwesterly to westerly aspects. The multi-layered stands are predominately mid seral, but do vary and are dominated by medium-sized trees with canopy covers ranging between 25 and 100%. *Tsuga mertensiana, Pseudotsuga menziesii* (Douglas-fir), *Larix occidentalis* (western larch), and *Pinus contorta* are dominant overstory species within the area. *Pseudotsuga menziesii* and *Tsuga mertensiana* are most frequently found in the tree understory. Common shrubs include *Salix scouleriana* (Scouler's willow) and *Vaccinium membranaceum* (thinleaf huckleberry). Common and characteristic herbaceous species are *Xerophyllum tenax, Arnica cordifolia* (heartleaf Arnica), *Pedicularis contorta* (coiled lousewort), and *Pyrola secunda* (sidebells pyrola).

The multi-layered mid-seral stands of *Tsuga mertensiana/Menziesia ferruginea, Xerophyllum tenax* occur on moderate steep slopes of various aspects. Structural conditions range from stands dominated by large-diameter trees to stands dominated by pole-sized trees. Dominate overstory species include *Tsuga mertensiana* and *Picea engelmannii* (Engelmann spruce). *Menziesia ferruginea* and *Pachistima myrsinites* (boxwood) occupy the shrub layer, and the herbaceous layer consists of *Goodyera oblongifolia* (western rattlesnake plantain).

Butler Creek Summary: Four stands were sampled in the 2000 field season. The area is predominately suitable lynx habitat classified as forage-high.

Three plant associations were sampled in the Butler Creek area. *Tsuga mertensiana/Clintonia uniflora* (bride's bonnet), *Menziesia ferruginea* was most commonly observed and sampled in 2 stands. The remaining associations were sampled only once. The *Tsuga mertensiana/Clintonia uniflora, Menziesia ferruginea* association is located on moderate to steep, north- to northeast-facing slopes.

The structural condition of these mid- to late-seral stands are dominated by large-size trees with a moderate (25 to 66%) canopy cover. *Pseudotsuga menziesii, Tsuga mertensiana,* and *Abies grandis* (grand fir) are the dominate species in the overstory. The shrub canopy includes *Menziesia ferruginea, Vaccinium membranaceum,* and *Lonicera utahensis* (Utah honeysuckle). Common herbaceous species are *Xerophyllum tenax, Arnica cordifolia, Smilacina stellata* (false Soloman's seal), and *Coptis occidentalis* (Idaho goldthread). Both stands are in pristine condition.

Rochat Peak Summary: Twenty stands were sampled in the 2000 field season. The area is predominately suitable lynx classified as forage-high. One stand of non-lynx habitat was also sampled within the area.

Thirteen plant associations were sampled in the Rochat Peak area. *Tsuga mertensiana/Menziesia ferruginea, Xerophyllum tenax* was most commonly observed and sampled in 3 stands. *Tsuga mertensiana/Xerophyllum tenax, Luzula hitchcockii*, *Tsuga mertensiana/Menziesia ferruginea, Luzula hitchcockii*, and *Tsuga heterophylla/Clintonia uniflora, Menziesia ferruginea* were sampled twice each; the remaining associations were sampled only once. *Tsuga mertensiana/Menziesia ferruginea, Xerophyllum tenax* is found on the upper to mid position of gentle to moderately steep, north- to east- facing slopes.

Multi-layered stands within the area are mid-seral, moderate (25 to 66%) canopy cover, and range from medium- to pole-size trees. Overstory species include *Tsuga mertensiana, Pinus contorta, Pinus monticola* (western white pine), and *Abies lasiocarpa* (subalpine fir). Tree regeneration consists of *Tsuga mertensiana* and *Pinus monticola. Vaccinium membranaceum* is present in the shrub layer, and *Xerophyllum tenax* and *Luzula hitchcockii* occupy the herbaceous layer. All stands are in pristine condition.

Point 6168 Summary: Eight stands were sampled in the 2000 field season. The area is predominately suitable lynx habitat classified as forage-high. Three stands classified as non-lynx habitat were also sampled.

Three plant associations were sampled in the Point 6168 area. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* was most commonly observed and sampled in 3 stands; the remaining associations were sampled once or twice. The distribution of *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* association is on moderate to moderately steep slopes of southerly to westerly aspects.

The structural condition of these late-seral stands ranges from large- to medium-sized trees with greater than 25% canopy cover. *Tsuga mertensiana* and *Pseudotsuga menziesii* are the dominant overstory species, and *Vaccinium globulare* (globe huckleberry) is the common shrub species. Characteristic herbaceous species in the area are *Xerophyllum tenax, Carex geyeri* (Geyer's sedge), *Pyrola secunda,* and *Festuca viridula* (Greenleaf fescue). All stands are in pristine condition.

Upper Pine Creek Summary (upper West Fork Pine): Six stands were sampled in the 2000 field season. The area is predominately suitable lynx habitat classified as forage-low. Hare browse was observed in 1 stand.
Three plant associations were sampled in the Upper Pine Creek area. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* was most commonly observed and sampled in 3 stands. *Tsuga*

mertensiana/Clintonia uniflora was sampled twice, and *Tsuga mertensiana/Xerophyllum tenax, Vaccinium scoparium* (grouse wortleberry) was sample once. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* occupies moderate to moderately steep, southeast-facing slopes.

The single-layered stands are early- to mid-seral, and are dominated by medium-size trees with a dense canopy cover of 66% and greater. *Tsuga mertensiana, Pseudotsuga menziesii,* and *Pinus contorta* frequently dominate the overstory. The shrub canopy is diverse and includes *Vaccinium globulare, V. membranaceum, Lonicera utahensis, Sorbus scopulina* (Greene's mountain ash), and *Pachistima myrsinites. Xerophyllum tenax, Arnica cordifolia,* and *Smilacina stellata* are common herbaceous species in the area. All stands show little evidence of post-industrial human caused disturbance.

Upper Hunter Creek Summary (Hunter and Calusa Creeks): Twelve stands were sampled in the 2000 field season. The area is a mixture of suitable lynx habitat classified as forage-high and forage-low. Hare browse was observed in 2 stands.

Seven plant associations were sampled in the upper Hunter Creek area. The most common association observed and sampled was *Tsuga mertensiana/Xerophyllum tenax,* in 3 stands. *Abies grandis/Acer glabrum* (Rocky Mountain maple), *Acer glabrum, Tsuga heterophylla/Clintonia uniflora, Clintonia uniflora*, and *Tsuga heterophylla/Asarum caudatum* (British Columbia wildginger), *Asarum caudatum* were each sampled twice, and the remaining associations were sampled only once. *Tsuga mertensiana/Xerophyllum tenax* is located on gentle to moderate upper position slopes and ridgetops of northerly aspects.

These mid-seral stands are dominated by pole- to medium-size trees with a moderate to dense canopy cover. The overstory in the area consists of *Tsuga mertensiana* and *Abies grandis.* Common shrubs are *Vaccinium globulare*, *Alnis sinuata* (Sitka alder), *Menziesia ferruginea*, and *Salix scouleriana*, and herbaceous species include *Xerophyllum tenax, Pyrola secunda,* and *Pyrola asarifolia* (liverleaf wintergreen). All stands show evidence of partial cutting.

2001 Field Season:

Lynx habitat field inventories occurred in the lower Latour, upper Rochat, Highland Creek and Douglas Creek drainages, within the Coeur d'Alene River Basin during September, 2001. The areas are located within the Latour Creek and St. Joe Divide West LAU's. Forty-two plots (including both stand level point observation and fixed area ecology plots) were located in 11 plant associations that total (approximately) 2516 acres. Snowshoe hare were not observed during the 2001 field season.

Snowshoe hare browse was observed on several plots located within the lower Latour Creek, upper Rochat Creek, Highland Creek and Douglas Creek drainages. Snowshoe hare winter browse was most frequently observed on *Salix scouleriana*, but also occurred on *Holodiscus discolor*, and *Acer glabrum.*

One population of *Thelypteris nevadensis* (a species considered critically imperiled within the state of Idaho) was located in the lower Latour Creek drainage.

Rochat Peak (Lower Kootenia, Rochat Creek, Rochat Peak) Summary: Nine stands were sampled in the 2001 field season. The area is a mixture of suitable lynx habitat classified as forage-high and forage-low. Hare browse was observed in 3 stands.

Two plant associations were sampled in the Rochat Peak area. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* was most commonly observed and sampled in 6 stands, and *Tsuga heterophylla/Clintonia uniflora, Clintonia uniflora* was observed and sampled in 3 stands. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* is widely distributed on gentle to moderately steep, southwest-facing slopes.

Single-layered stands within the area are predominately mid-seral and dominated by medium-sized trees with an open to moderate canopy cover (25 to 66%). The diverse tree canopy consists of *Tsuga mertensiana*, *Larix occidentalis, Abies lasiocarpa, Pinus contorta,* and *Pseudotsuga menziesii. Salix scouleriana, Pachistima myrsinites,* and *Vaccinium membranaceum* are common in the shrub canopy. The herbaceous layer includes *Xerophyllum tenax* and *Carex geyeri*.

Upper Pine Creek (Wardner Peak, Wardner Creek, Highland Creek, upper East Fork, upper Dry Gulch, and Blue Eagle Creek) Summary: Twenty-seven stands were sampled in the 2001 field season. The area is predominately suitable lynx habitat classified as forage-low (45% of stands sampled). Eighteen and one half percent of the stands were classified as forage-high, and 22% of stands were classified as possible denning habitat. Hare browse was observed in 3 stands.

Ten plant associations were sampled in the Upper Pine Creek area. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* was most commonly observed and sampled in 10 stands. *Abies grandis/Acer glabrum, Physocarpus malvaceus* (mallow ninebark) was observed and sampled in 4 stands; the remaining associations were sampled either once or twice. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* is extensive in the area, and is commonly found on gentle to steep slopes and ridgetops of southwesterly to northwesterly aspects.

Stands within the area are mid-seral. Structural condition of these multi-layered stands range from stands dominated by pole-diameter size trees to stands dominated by medium-sized trees. All stands have a moderately open to dense canopy cover (>=25%). The tree canopy consists of *Tsuga mertensiana*, *Pseudotsuga menziesii*, *Abies grandis*, and *A. lasiocarpa.* Tree regeneration in the understory includes *Tsuga mertensiana* and *Abies lasiocarpa* which are intermixed with common shrubs such as *Vaccinium membranaceum*, *V. globulare, Pachistima myrsinites*, and *Lonicera utahensis*. Common and characteristic herbaceous species include *Xerophyllum tenax, Carex geyeri, Pyrola secunda,* and *Calamagrostis rubescens* (pinegrass). Lynx habitat in the area for *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* is a mixture of forage-high and forage-low with possible denning in 3 stands.

2002 Field Season:

Lynx habitat field inventories occurred in Ahrs Canyon, upper Rochat Creek, and upper Street Creek drainages within St. Joe River Basin in August 2002. For purposes of discussion these sample areas are referred to as Ahrs Canyon and Rochat-Street Creek. Thirty-seven plots (including both stand level point observation and fixed area ecology plots) were located in 24 stands that total (approximately) 1364 acres.

Snowshoe hare were not observed during the 2002 field season. Snowshoe hare browse, however, was observed on plots located in both Ahrs Canyon and Rochat-Street Creek. As observed in previous years within the study area, snowshoe hare winter browse was most frequently found on *Salix scouleriana*, but also occurred on *Holodiscus discolor*, and *Acer glabrum.*

Ahrs Canyon: Twelve stands were sampled in the 2002 field season. The area is predominantly suitable lynx habitat classified as forage-low. Twenty-five percent of the stands were classified as poor high quality forage habitat. Hare browse was observed in 1 stand.

Nine plant associations were sampled in the Ahrs Canyon area. *Tsuga mertensiana/Xerophyllum tenax* (both *Xerophyllum tenax* phase and *Luzula hitchcockii* phase) was most frequently observed and was sampled in 5 stands. The remaining associations were sampled only once. *Tsuga mertensiana/Xerophyllum tenax* association occurs on mid- to upper-slope positions of broad, south- to southwest-facing slopes.
The multi-layered stands of the drainage are predominantly late-seral. Structural conditions range from stands dominated by large-diameter trees to stands dominated by medium-sized trees. *Tsuga*

mertensiana and *Pseudotsuga menziesii* are the dominant overstory species. *Tsuga mertensiana, Abies lasiocarpa, Pseudotsuga menziesii,* or *Abies grandis* may be present in understory tree stata depending on site conditions. Common understory shrubs include *Salix scouleriana, Vaccinium membranaceum, Pachystima myrsinites, Lonicera utahensis*, and *Spiraea betulifolia* (white spirea). Common and characteristic understory herbs and graminoids within the drainage include: *Xerophyllum tenax, Carex geyeri, Carex rossii, Clintonia uniflora,* and *Smilacina stellata*.

Rochat-Street Creek Summary: Twenty-two stands were sampled in the 2002 field season. The predominant lynx habitat condition is low quality forage. Fifty percent of the stands sampled, however, were classified as poor to excellent high quality forage habitat. Hare browse (recent and old) was observed in 4 stands.

Twelve plant associations were sampled in the Rochat-Street Creek area. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* was sampled on 10 stands and was most frequently observed. *Abies grandis/Vaccinium globulare* was observed in 2 stands; the remaining associations were sampled only once. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* is widely distributed within the area on mid- to upper-slope positions of steep to gentle, broad slopes, and (occasionally) ridgetops. The association is found on all aspects.

Multi-layered stands within the area are predominantly mid-seral, moderately open (25 to 66% canopy cover), and dominated by medium-sized trees. *Tsuga mertensiana, Larix occidentalis, Pinus monticola, Pinus contorta, and Pseudotsuga menziesii* are dominant overstory species within the area. *Pseudotsuga menziesii, Abies lasiocarpa, Tsuga mertensiana, Pinus monticola, or Abies grandis* may be present in understory tree strata, depending on site aspect and elevation. Common shrubs within the area include *Salix scouleriana, Vaccinium membranaceum, Spiraea betulifolia, Pachystima myrsinites, Lonicera utahensis, and Menziesia ferrugineum*. Common and characteristic herbaceous species include *Xerophyllum tenax, Carex geyeri, Carex rossii, Pyrola secunda, Viola orbiculata, Clintonia uniflora, Arnica cordifolia,* and *Epilobium angustifolium*. Ungulate and bear sign were frequently observed. All stands sampled in the area are in pristine condition.

2003 Field Season:

Lynx habitat field inventories occurred in upper West Fork of Pine Creek, Mt. Wiessner, Fortynine Meadows, and along established Ridgetrail 52 between Orphan Pt. and Breezy Pt. (which passes across Lookout Mountain) in July and August 2003. For purposes of discussion these sample areas are referred to as Upper Pine Creek, Mt. Wiessner, Fortynine Meadows, and Lookout Mountain. Fifty-seven plots (including both stand level point observation and fixed area ecology plots) were located in 24 stands that total (approximately) 2789.94 acres.

Snowshoe hare were not observed during the 2003 field season. Snowshoe hare browse and pellets, however, were observed on plots located in the Fortynine Meadows, Mt. Wiessner, Pine Creek, and Lookout Mountain inventoried areas. As observed in previous years within the study area, snowshoe hare winter browse was most frequently observed on *Salix scouleriana*, but also occurred on *Acer glabrum*, *Holodiscus discolor*, *Ledum glandulosum* (western Labrador tea)*, Menziesia ferruginea,* and *Vaccinium membranaceum.*

Upper Pine Creek (Upper West Fork of Pine Creek) Summary: Ten stands were sampled in the Upper Pine Creek area. The area is predominantly suitable lynx habitat classified as forage-low. Hare pellets were observed in 1 stand.

Seven plant associations were sampled in the upper Upper Pine Creek area. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* and *Abies grandis/Coptis occidentalis* were most

frequently observed and were sampled in 3 and 2 stands, respectively. The remaining associations were sampled only once. The *Tsuga mertensiana/Xerophyllum tenax* association is extensive and occurs on broad moderately sloped ridgecrests of various aspects.

The multi-layered stands within the area are predominantly early- to mid- seral, open (10 to 15% canopy cover), and dominated by medium-sized trees. *Tsuga mertensiana* and *Abies lasiocarpa* are the dominant overstory species. In the understory *Acer glabrum* and *Salix scouleriana* (Scouler's willow) (shrubs > 2 meters in height) form dense patchy thickets with *Vaccinium membranaceum*. Other common understory shrubs include *Amelanchier alnifolia* (Saskatoon serviceberry)*, Pachistima myrsinites,* and *Spiraea betulifolia*. Common and characteristic understory herbs and graminoids include: *Anaphalis margaritacea* (western pearly everlasting)*, Arnica cordifolia, Carex geyeri, Heuchera cylindrica* (roundleaf alumroot)*,* and *Xerophyllum tenax.* All stands sampled in the area are in pristine condition.

Latour Peak (Mt. Wiessner) Summary: Sixteen stands were sampled in the 2003 field season. The predominant lynx habitat condition is forage-high with a few stands being forage-low. One stand is potential lynx denning. Hare pellets were observed in 2 stands.

Eight plant associations were sampled in the Mt. Wiessner area. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* was sampled on 5 stands and was most frequently observed. *Tsuga mertensiana/ Menziesia ferruginea* (rusty menziesia)*, Xerophyllum tenax* and *Tsuga mertensiana/Xerophyllum tenax, Luzula hitchcockii* were also sampled on multiple stands. The remaining associations were sampled only once. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* is widely distributed in the area on mid- to upper-slope positions of steep to gentle, broad slopes, and (occasionally) ridgecrests. The association is found predominately on southerly aspects.

Stands within the area are late-seral. Structural conditions range from stands dominated by large-diameter trees to stands dominated by medium-sized trees. *Tsuga mertensiana* is the dominant overstory species within the area. Small pockets of tree regeneration are present in understory tree strata depending on site aspect and elevation. Common shrubs within the area include *Salix scouleriana, Sorbus scopulina* (Greene's mountain ash), and *Vaccinium membranaceum*. Common and characteristic herbaceous species include: *Epilobium angustifolium* (fireweed)*, Luzula hitchcockii, Thalictrum occidentale* (western meadow-rue)*,* and *Xerophyllum tenax.* Ungulate sign and small animal burrowing were frequently observed. All stands sampled in the area are in pristine condition.

Fortynine Meadows Summary: Sixteen stands were sampled in the 2003 field season. The predominate lynx habitat condition is forage-high with 50 percent of those stands rated as low quality forage. Twenty-five percent of total stands sampled are temporary non-lynx habitat. Hare pellets and browse were detected in 8 stands.

Ten plant associations were sampled in the Fortynine Meadows area. The most frequently observed association was *Tsuga mertensiana/Clintonia uniflora, Menziesia ferruginea.* It was sampled in 5 stands. All remaining stands were either sampled once or twice. *Tsuga mertensiana/Clintonia uniflora, Menziesia ferruginea* occurs on gentle slopes and toeslopes of various aspects.

2004 Field Season:

Lynx habitat field inventories were focused to enhance interpolation of lynx habitat throughout LAU's , on BLM land that had already been visited and partially sampled prior to 2004. LAU's visited in August 2004 were Lost Rocket, Freezeout, Grandmother Mountain, Latour Creek, and Pine Creek. One hundred and nineteen plots (including both stand level point observation and fixed area ecology plots) were located in 38 plant associations that total (approximately) 8950.00 acres.

Snowshoe hare were observed on 3 occasions at mid to high elevation (4000 and 5600 feet) near Twin Crags and lower Rochat Creek. Snowshoe hare browse was observed in numerous plots throughout the following areas: Lookout mountain, Latour Peak, and Rochat Creek. Hare pellets were observed in the Rochat Creek area. Snowshoe hare winter browse, as in previous years, was observed on *Salix scouleriana*, *Menziesia ferruginea, Acer glabrum*, *Holodiscus discolor*, and *Vaccinium membranaceum.*

Lookout Mountain (Orphan Point, Crater Lake, Crater Point, Fish Lake, Freezeout, Little Lost Lake Ridge, Lost Lake, and Lund Creek) Summary: Thirty-three plots were sampled in the 2004 field season. The area is predominantly suitable lynx habitat classified as forage-high (33%), and 18% of stands were classified as forage-low. Lynx denning habitat was primarily observed in Lund Creek drainage, but potential denning was observed in 4 stands throughout the sampled area. Snowshoe hare browse was observed in 1/3 of stands sampled.

Twelve plant associations were sampled in the Lookout Mountain area. The area is diverse and the most frequently observed association was *Tsuga mertensiana/Menziesia ferruginea, Luzula hitchcockii* . It was sampled in 7 stands. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax, Tsuga mertensiana/ Clintonia uniflora, Menziesia ferruginea,* and *Tsuga mertensiana/Menziesia ferruginea, Xerophyllum tenax* were also frequently observed and sampled in 6, 5, and 4 stands, respectively. The remaining associations were sampled either once or twice. *Tsuga mertensiana/Menziesia ferruginea, Luzula hitchcockii* is located on moderate to gentle slopes of various aspects. It was not observed on east-facing slopes.

These single- to multi-layered stands are primarily late-seral. The stand structure class ranges from large- to medium-sized trees, and has a canopy cover that ranges from moderately open to very dense. The tree canopy and regeneration predominately consists of *Tsuga mertensiana* and *Abies lasiocarpa. Menziesia ferruginea* and *Vaccinium membranaceum* occupy the shrub layer. Common herbaceous species are *Xerophyllum tenax, Luzula hitchcockii, Carex rossii* (Ross' sedge), *Mitella breweri* (Brewer's miterwort), and *Listeria caurina* (northwestern twayblade). Suitable lynx habitat in *Tsuga mertensiana/Menziesia ferruginea, Luzula hitchcockii* stands is denning/possible denning and forage-high. All stands are in pristine condition. Elk and deer pellets as well as small mammal burrowing was observed throughout the area.

Latour Peak (Latour Creek, Boise Peak) Summary: Nine stands were sampled in the 2004 field season. All suitable lynx habitats were found in this area in approximately equal proportions. Hare browse was detected in 4 stands.

Seven plant associations were sampled in the Latour Peak area. Two associations were most recurrent, and sampled each twice: *Abies grandis/Acer glabrum,* and *Thuja plicata* (Western red cedar)/*Clintonia uniflora*. Remaining stands were sampled once. *Abies grandis/Acer glabrum* is located on moderate slopes of southwest-facing slopes.

The multi-layered stands are predominately mid-seral. Structural condition consists primarily of medium-size trees ranging in canopy cover from 25 to 66%. *Abies grandis, Pseudotsuga menziesii, Pinus ponderosa* (ponderosa pine), and *Larix occidentalis* comprise the tree overstory. *Abies grandis* and *Pseudotsuga menziesii* are the most frequent tree regeneration species. Common shrubs in the area include *Berberis repens* (creeping barberry), *Acer glabrum, Salix scouleriana,* and *Pachistima myrsinites.* The consistent herbaceous species include *Xerophyllum tenax* and *Smilacina stellata.* Suitable lynx habitat in *Abies grandis/Acer glabrum* is a mixture of forage-high and forage-low. All stands are in pristine condition.

Thuja plicata/Clintonia uniflora is found on moderate slopes of westerly to northwesterly aspects. Structural condition ranges between large- and medium-sized trees, and has a canopy cover greater than

66%. The multi-layer stands are predominately mid- to late-seral. *Thuja plicata, Pseudotsuga menziesii, Abies grandis,* and *Tsuga mertensiana* are common in the tree overstory. *Thuja plicata* is consistent in the tree regeneration layer. *Acer glabrum* and *Vaccinium membranaceum* and *Coptis occidentalis* and *Smilacina stellata* are the common shrubs and herbaceous species in the area. Suitable lynx habitat in *Thuja plicata/Clintonia uniflora* is either denning or forage-high. All stands are in pristine condition.

Upper Pine Creek (Calusa Creek, East Fork Pine Creek, Middle Fork Pine Creek, Trapper Creek, Upper West Fork Pine Creek, and West Fork Big Creek) Summary: Fifty-three plots were sampled in the 2004 field season. The area is primarily a mixture of suitable lynx habitat of forage-high and forage-low. However, some stands sampled within the Calusa Creek area ranged between 3100 and 4000 ft. elevation, and although hare browse was observed on shrubs within sampled stands these few stands may need to be re-classified as non-lynx habitat due to the elevation parameter. Six stands were identified as lynx denning with an additional 2 stands noted as potential denning. Stands considered as denning are scattered throughout the Upper Pine Creek area.

Twenty plant associations were sampled in the Upper Pine Creek area. The 2 most recurrent and sampled associations (9 and 7 stands) were *Abies grandis/Acer glabrum, Acer glabrum* and *Tsuga mertensiana/ Xerophyllum tenax*, *Xerophyllum tenax*, respectively. *Abies grandis/Asarum caudatum* was observed in 6 stands. *Tsuga mertensiana/Menziesia ferruginea, Xerophyllum tenax* and *Abies grandis/Coptis occidentalis* were observed in 4 stands each. The remaining associations were sampled in 3 stands or less. *Abies grandis/Acer glabrum, Acer glabrum* occurs on mid-position broad slopes of predominately southwesterly aspects.

The structural conditions range from stands dominated by large-diameter trees to stands dominated by medium-sized trees. All stands are multi-layered and have a 25% or greater canopy cover. Stands are also predominately mid-seral. The tree canopy and regeneration layers are dominated by *Abies grandis* and *Pseudotsuga menziesii. Acer glabrum, Vaccinium membranaceum, Physocarpus malvaceus, Rosa gymnocarpa* (dwarf rose), and *Pachistima myrsinites* are common shrubs in the area. Common and consistent herbaceous species include *Xerophyllum tenax, Arenaria macrophylla* (bigleaf sandwort), *Anemone oregana* (Oregon anemone), *Goodyera oblongifolia*, and *Thalictrum* sp. Suitable lynx habitat in *Abies grandis/Acer glabrum, Acer glabrum* is a mixture of forage-high and forage-low. Denning habitat was observed in 2 stands. The majority of stands are in pristine condition, with 3 stands located in the vicinity of active logging operations.

Tsuga mertensiana/ Xerophyllum tenax, *Xerophyllum tenax* is located on gentle to moderately steep slopes of northerly and southerly aspects. The multi-layered stands are predominately mid-seral. The structural conditions range from stands dominated by large-diameter trees and stands dominated be medium-sized trees. Canopy cover for all stands is greater than 40%. A diverse tree canopy consists of *Tsuga mertensiana, Abies grandis, Pseudotsuga menziesii, Pinus monticola, P. contorta,* and *Larix occidentalis.* Tree seedlings in the area are predominately *Tsuga mertensiana.* The shrub layer includes *Vaccinium membranaceum, Salix scouleriana, Spiraea betulifolia* (white spirea), and *Pachistima myrsinites.* Common and consistent herbaceous species are *Xerophyllum tenax, Arenaria macrophylla, Chimaphylla umbellatum* (pipsissewa), and *Calamagrostis rubescens*. Suitable lynx habitat in *Tsuga mertensiana/ Xerophyllum tenax*, *Xerophyllum tenax* is a mixture of forage-high and forage-low. Lynx denning was observed in 1 stand. All stands are in pristine condition. Elk pellets, bear scat, large and small mammal burrowing, and possible coyote scat were observed throughout the area.

Rochat Creek (Lower Rochat Creek, Rochat Peak, St. Joe Baldy) Summary: Twenty plots were sampled in the 2004 field season. The predominant lynx habitat in the area is classified as suitable forage-low. Forage-low habitat was concluded on greater than 50% of plots, forage-high habitat was determined on less than 50%, and lynx denning was not found. Hare browse and pellets were observed in 4 and 5 stands, respectively.

Ten plant associations were sampled in the Rochat Creek area. *Abies grandis/ Xerophyllum tenax* was most frequently observed and sampled in 6 stands. *Tsuga mertensiana/ Xerophyllum tenax*, *Xerophyllum tenax* and *Abies grandis/ Acer glabrum* were sampled in 3 stands each. The remaining associations were sampled once or twice. *Abies grandis/ Xerophyllum tenax* occupies gentle to moderate slopes of northwesterly and southwesterly aspects.

The structural condition of these predominately mid-seral, multi-layered stands is dominated by medium-sized trees with a canopy cover of greater than 25%. One stand is dominated by pole-sized trees. *Abies grandis, Pseudotsuga menziesii,* and *Larix occidentalis* are common tree species in the overstory. Tree seedlings include *Abies grandis* and *Pseudotsuga menziesii.* The shrub layer consists of *Holodiscus discolor*, *Vaccinium membranaceum,* and *Menziesia ferruginea.* Common herbaceous species are *Arnica latifolia* (broadleaf arnica), *Smilacina stellata*, and *Xerophyllum tenax.* Suitable lynx habitat in *Abies grandis/ Xerophyllum tenax* is forage-low. All stands sampled are in pristine condition with the exception of 1, which looks like it may have been logged many years ago. Elk pellets, bear scat, and small mammal burrowing were detected throughout the area. A sow and cub were seen in the St. Joe Baldy area.

Snowshoe hare browse and/or pellets were observed in each study area during the 2000 through 2004 field inventories. Detection of hare activity were found in all forest age classes. Denning and/or potential denning habitat was most frequently observed during the 2004 field inventory. Stands classified as denning either had root wads, rotted or burned cavities in large-sized trees, and/or abundant jack-strawed dead and down trees present. It was also thought that habitat in the vicinity of Fish Lake could provide potential denning due to the dense shrub thickets of *Menziesia ferruginea.*

DISCUSSION

Lynx utilize a wide range of different habitats throughout the year. Lynx population dispersal and growth are limited, however, by the availability and quality of winter forage habitat. The utilization of stands by snowshoe hare, the primary prey of lynx, is found in a wide range of stand ages. The value, or functionality, of winter forage habitat is dependent on the availability and proximity of denning habitat. Denning habitat needs to be within daily travel distance from foraging habitat (refer to Box 1), especially during the periods of parturition and rearing of young. March and April is the breeding period for Canada lynx, and the females rear the young exclusively (Koehler 1990).

Factors that contribute to the distribution and extent of lynx habitats within the study area include: relatively steep gradients in atmospheric and soil moisture availability and soil temperature; disturbance history, particularly the relatively severe fire season of 1910; the mix of public and private land ownerships; and a history of relatively extensive timber harvesting and mining.

The diversity of forest stand structural and seral conditions present within the study area provides a range of lynx winter forage habitats of varying suitability. Due to the continual change in forest stand composition and structure, the availability of suitable lynx forage habitats is spatially and temporally dynamic. Patterns in the distribution and characteristics of forage habitat observed in Pine Creek, Latour Creek, Grandmother Mountain, Lost Rocket, and Freezeout were similar to those observed in previous years within the study area (Rust 2000, Rust 2002; Rust and Miller 2003; Miller and Rust 2004).

Temporary non-suitable, shrub-dominated stands are, however, comparatively more abundant in the Fortynine Meadows area, due to the extent of recent harvest activity at this site. Ruediger et al. (2000) states that early successional stands generated by disturbances such as fire, timber harvests, and insect infestations creates forage and cover for snowshoe hares thus providing foraging habitat for lynx. However, these disturbance-created stands do not provide habitat that is utilized by lynx and snowshoe hare for long periods of time as do mid- to late-seral forest stands.

Evidence of past disturbance is common throughout the study area. For example, this is often indicated by the abundance of *Pinus contorta*, an important early seral species in the area. A recognized pattern for the distribution of lynx habitats is that forage habitats are associated with early- to mid-seral while denning is commonly associated with late-seral forest vegetation. However, none of these lynx habitats appear to be restricted to a single climax plant association. This has been documented on USDA Forest Service land in northern Idaho, central and northeastern Washington, and on land administered by different entities within these areas (Fish and Wildlife 2001). These same patterns were observed for the 2000 through 2004 field inventories throughout the studied lynx habitat analysis units on BLM land within the Upper Columbia-Salmon Clearwater District, Idaho. Figures 1 and 2 show these forest mosaics that include early successional stands, which support abundant prey for hunting, adjacent to or intermixed with mature forests, which may serve as denning and travel corridors.

Natural disturbances within the study area are important in sustaining lynx habitat. Disturbances such as fire and insect infestations initiate a natural cycle of forest rejuvenation and maturation. However, each disturbance effects forested ecosystems successional pathways differently. Fire disturbance favors the re-establishment of early shade intolerant species where as insect infestations tend to favor the succession of late-seral species, which are usually shade tolerant species (Stadt 2001;Sinton et al. 2000). The importance of insect infestations and disease epidemics in forests is that these events maintain dead and down tree structural components that are utilized by lynx for denning (Ruggiero et al. 1994).

Logging practices can produce the same results as natural disturbance. Timber harvest and thinning favors the re-establishment of early successional stands. Koehler and Brittell (1990) suggest that natural regeneration of forests can be accomplished when logging, and thinning units that are less than 40 acres in size still offer forage and cover for snowshoe hares. Thus resulting in early-seral stands that provide suitable lynx habitat classified as forage-high. Maintained units should be unevenly shaped and not positioned adjacent to large open areas such as recent clearcuts, burns, and large meadows. Canopy cover along ridges and saddles should be maintained because lynx utilize saddles and ridges for traveling, but do not cross opened areas greater than 300 ft wide.

Thinning practices in both early- and mid-seral stands may be used to accommodate snowshoe hare and lynx requirements. According to Ruggiero et al. (1994) thinning stands early must be done before snowshoe hare inhabit the area and if not, thinning should be done at a later time (stands >30-40 years) when stands are not heavily utilized by snowshoe hare. Using the terminology of Oliver and Larson (1996), thinning practices would need to occur early or very late in the stem exclusion stage. The stem exclusion stage is the second of 4 stages of development, and is defined by the ceasesion of new stem growth and the death of some exisiting stems. Other stages include: 1) stand initiation, 3) Understory Re-initiation, and 4) Complex-Old Growth. The terminology of Oliver and Larson (1996) is used to described the following observed suitable lynx habitat within the study area.

Lynx forage habitats were observed primarily on high-slope to mid-slope positions of major ridges and watershed divides. Stands classified as winter forage habitat are primarily mid-seral and dominated by medium-sized (9.0 - 20.9 inch dbh) trees. These stands are in the stem exclusion and understory re-initiation stages of stand development. Stands in the early stages of stem exclusion typically posses remnant lynx winter forage habitat characteristics (suitable hare forage and understory cover) and are currently progressing toward a less suitable condition. As relatively dense pole-sized trees compete for limited growing space, foliage is increasingly more concentrated in the upper portion of the canopy, leaving an open understory of shade tolerant, medium-height shrubs and perennial forbs.

Stands in the late stages of stem exclusion (to early stages of understory re-initiation) are progressing toward more suitable lynx winter forage habitat conditions. The mortality of overstory trees allows increasing understory establishment of conifers (which provide understory hiding cover for hare) and re-initiation of growth of deciduous shrub forage. In many stands bark beetle mortality in lodgepole pine is

promoting stand understory re-initiation processes and increasing the availability of lynx winter forage habitat conditions.

Recreation activities occurring within lynx habitat could pose a potential threat as well. The predator-prey relationship between lynx and snowshoe hare is vastly specialized, and lynx are highly adapted to travel in deep soft powdery snow. If large areas of snow are compacted by roads, skiing, snowmobiling, and trails, lynx loose their competitive edge over other preditors whom are generalists. Lynx suitable habitat types (denning, forage, and travel) are all important to the survival of the lynx. Fragmentation of any of the habitats could be detrimental to lynx survival.

Lynx are specialized predators adapted to life in deep snow characteristic of mountainous regions of western North America. Lynx are known to occur in the Coeur d'Alene, St. Joe, and St. Maries river basins. USDI Bureau of Land Management and US Fish and Wildlife Service (2000) identify habitat inventory and monitoring as important contributions to the conservation of lynx. The objective of this multi-year study was to delineate potential lynx habitats on BLM lands within LAUs on the Upper Columbia-Salmon Clearwater District. The disturbance history of the area, gives rise to a patchy mosaic of different structures and seral conditions. Thus, potentially, the study area exhibits a full complement, suitable to lynx habitats. Lynx forage and denning habitats and a snowshoe hare prey base were observed and documented in Freezeout, Grandmother Mountain, Latour Creek, Lost Rocket, Marble Mountain, Pine Creek, St. Joe Divide West, and Upper Fishhook LAUs.

Table 2. Summary of Lynx Analysis Unit (LAU) acres surveyed for 2000 through 2004 field seasons, and the percentage of lynx habitat within each LAU.

Lynx Analysis Unit (LAU)	Total acres	Denning %	Forage %	Travel %	Temporary non-lynx %	Non-Lynx %
Bitterroot Divide south LAU	856.00		19.84	74.00	6.16	
Freezeout LAU	3157.00	4.92	37.46	41.79	8.00	7.83
Grandmother Mountain LAU	4827.00	0.87	44.34	44.89	7.99	1.92
Latour Creek LAU	14,423.00	0.33	30.64	35.45	19.17	14.41
Lost Rocket LAU	7603.00		37.67	38.95	16.40	6.98
Marble Mountain LAU	14.00			100.00		
Pine Creek LAU	18,895.00	0.36	28.03	40.28	14.94	16.39
St. Joe Divide east LAU	1438.00		33.49	42.81	2.15	21.56
St. Joe Divide west LAU	1842.00		3.78	79.57	8.83	7.82
Upper Fishhook LAU	21.00		100.00			

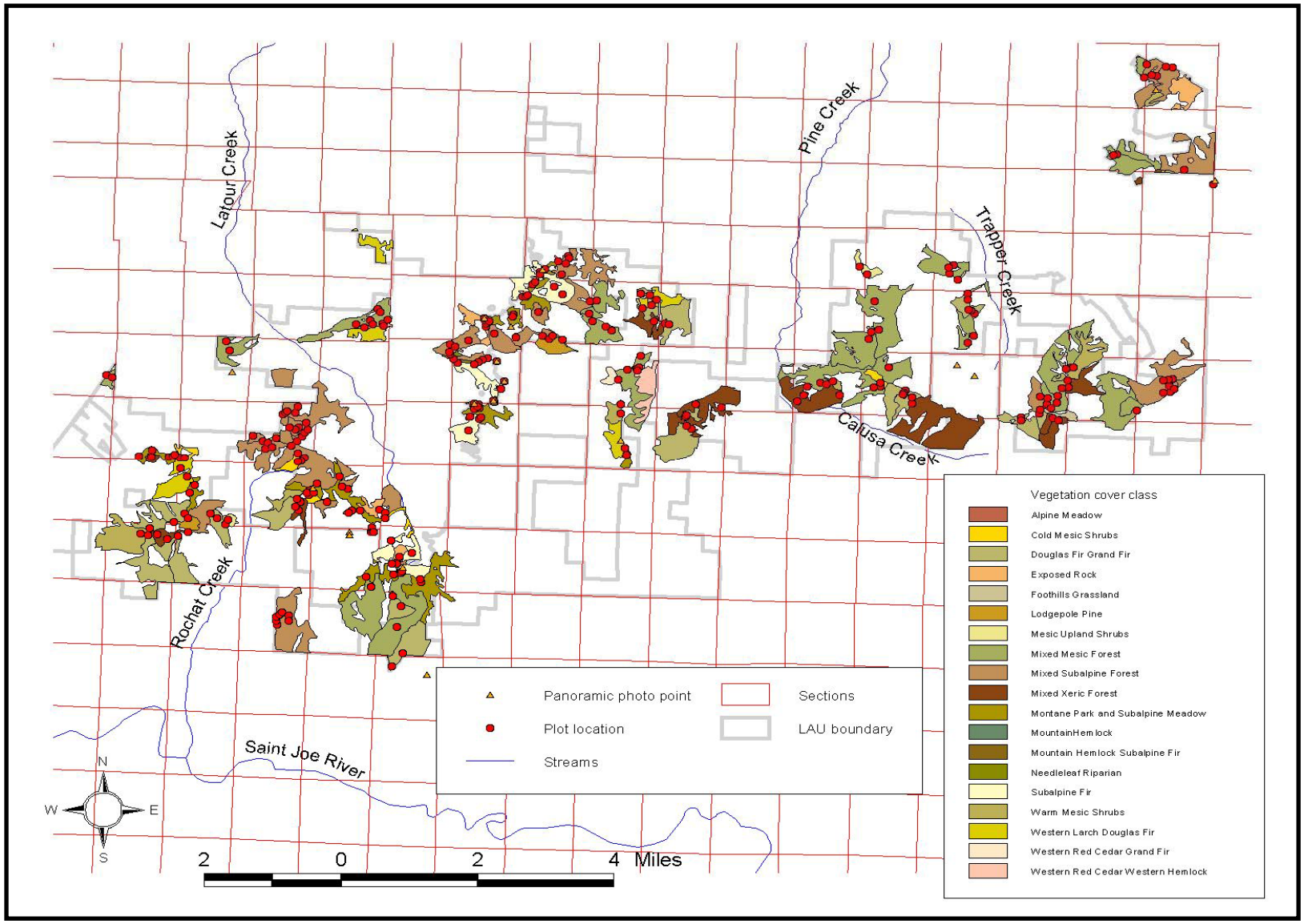

Figure 1.. Summary of lynx habitat inventories in northern portion of study area, Latour Creek, St. Joe Divide West, and Pine Creek LAUs. The locations of 2000 through 2004 field season sample plots, panoramic photo points, and sampled stands are shown.

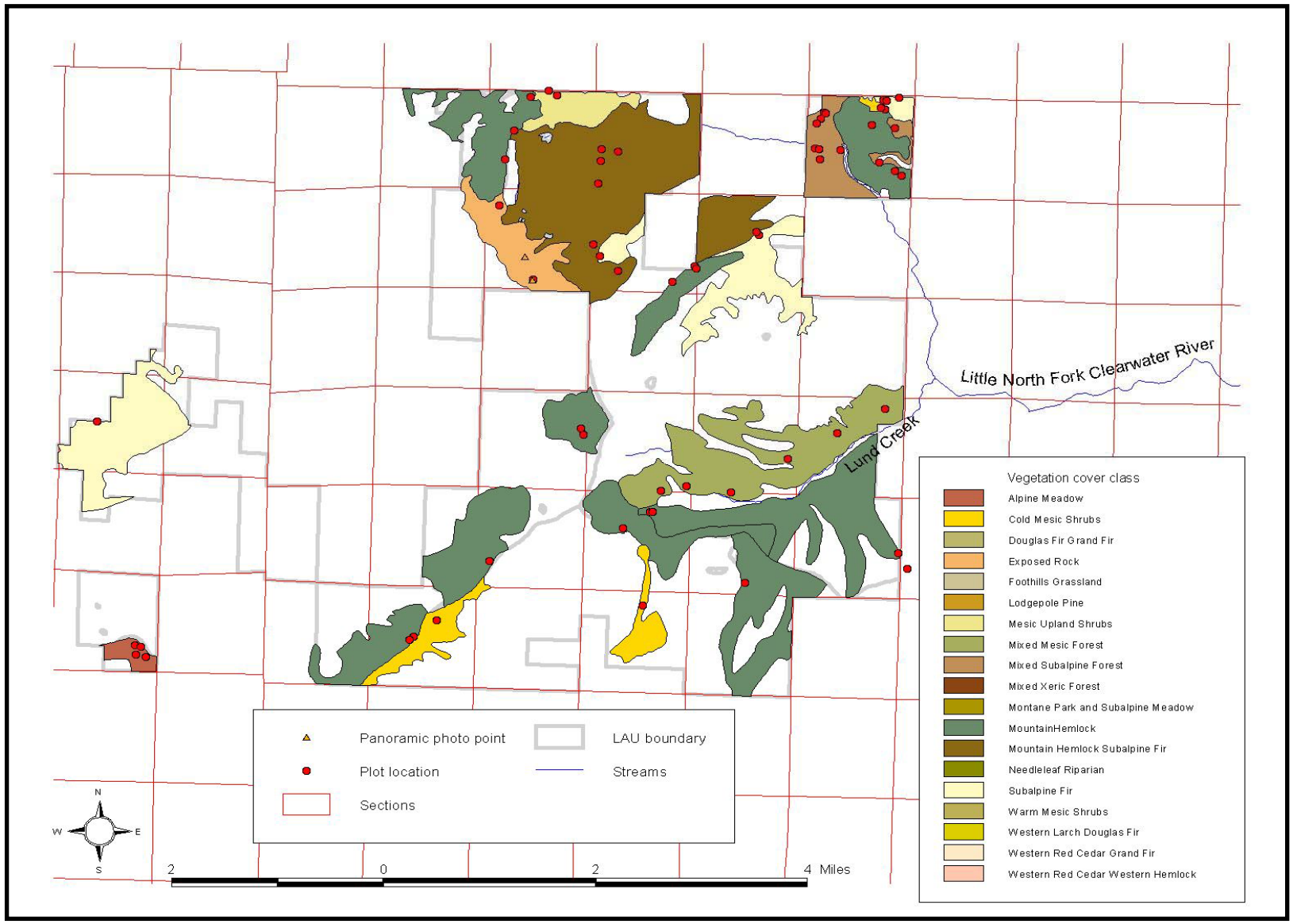

Figure 2. Summary of lynx habitat inventories in southern portion of study area, Grandmother Mountain, Freezeout, Upper Fishhook, Marble Mountain, and Lost Rocket LAUs. The locations of 2000 through 2004 field season sample plots, panoramic photo points, and sampled stands are shown.

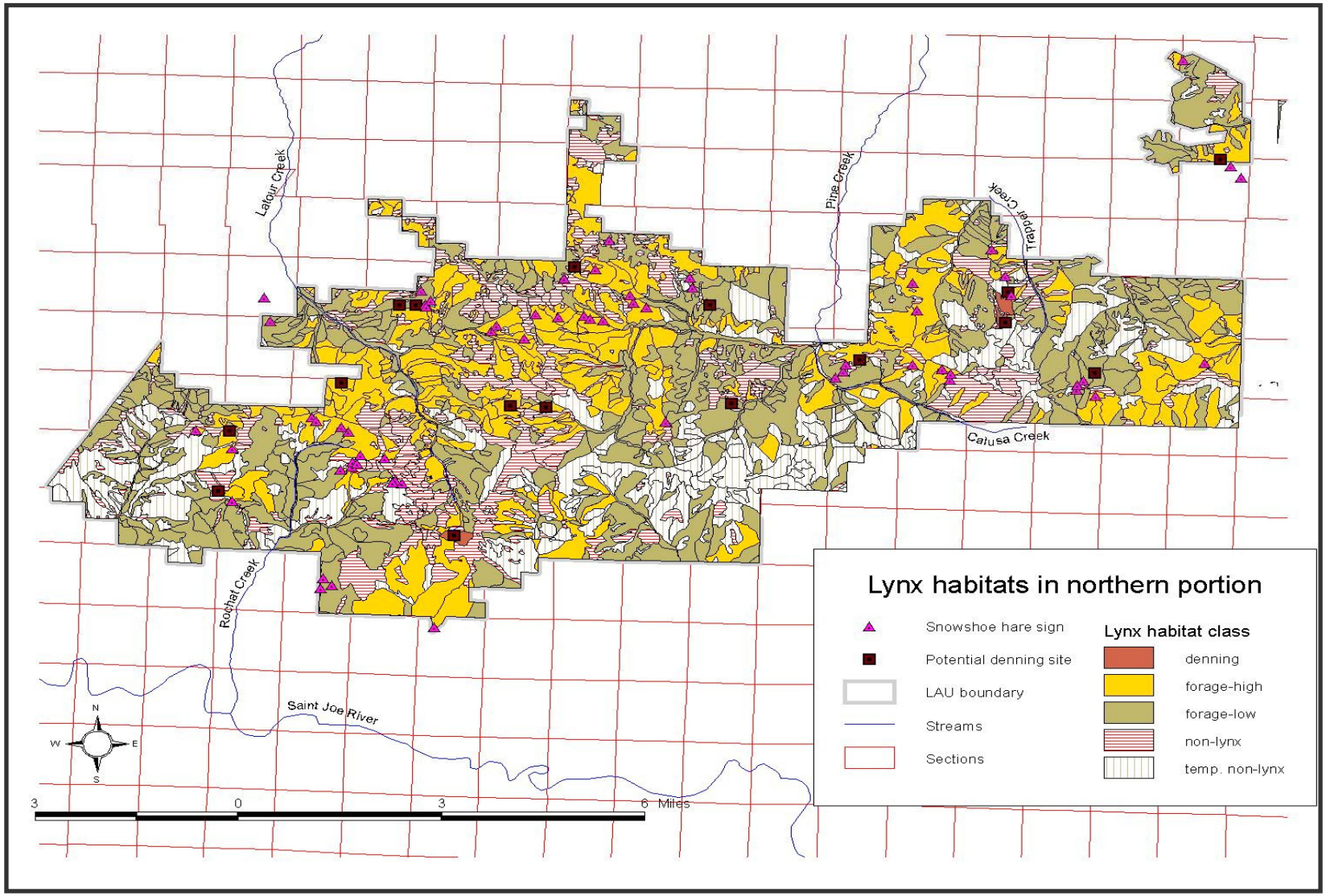

Figure 3. Lynx habitats in northern portion of the study area, Latour Creek, St. Joe Divide west, and Pine Creek LAUs. Lynx habitat classes are interpolated from 2000 through 2004 field observations. Stands actually sampled are shown in Figure 1. Snowshoe hare and potential denning site observation points are shown in relation to observed and interpolated lynx habitat.

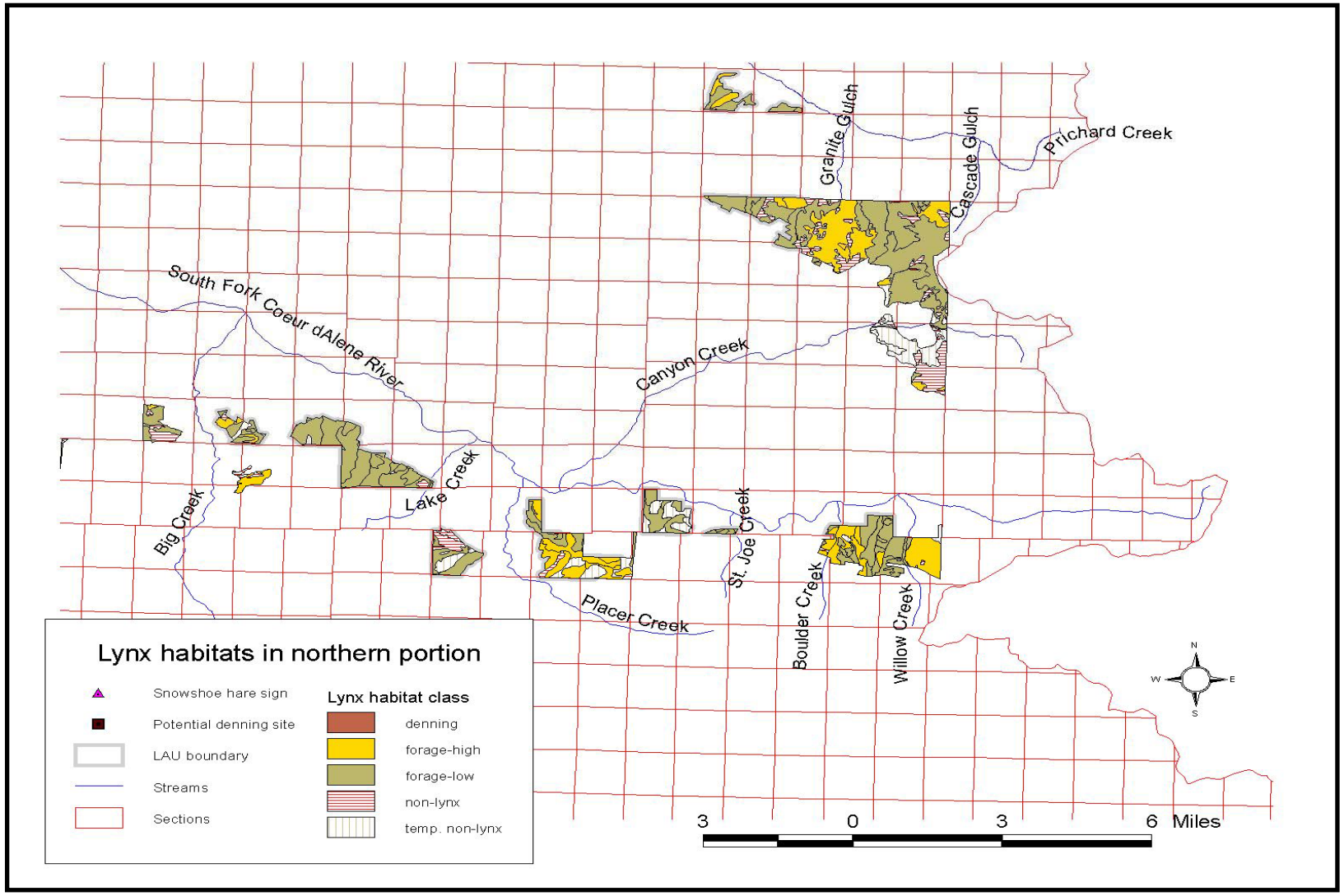

Figure 4. Lynx habitats in northern portion of the study area, St. Joe Divide west, St. Joe Divide east, and Bitterroot Divide south LAUs. Lynx habitat classes are interpolated from data provided by Upper Columbia-Salmon Clearwater District (2000) and Landscape Dynamics Lab (2002). No stands sampled in the above areas.

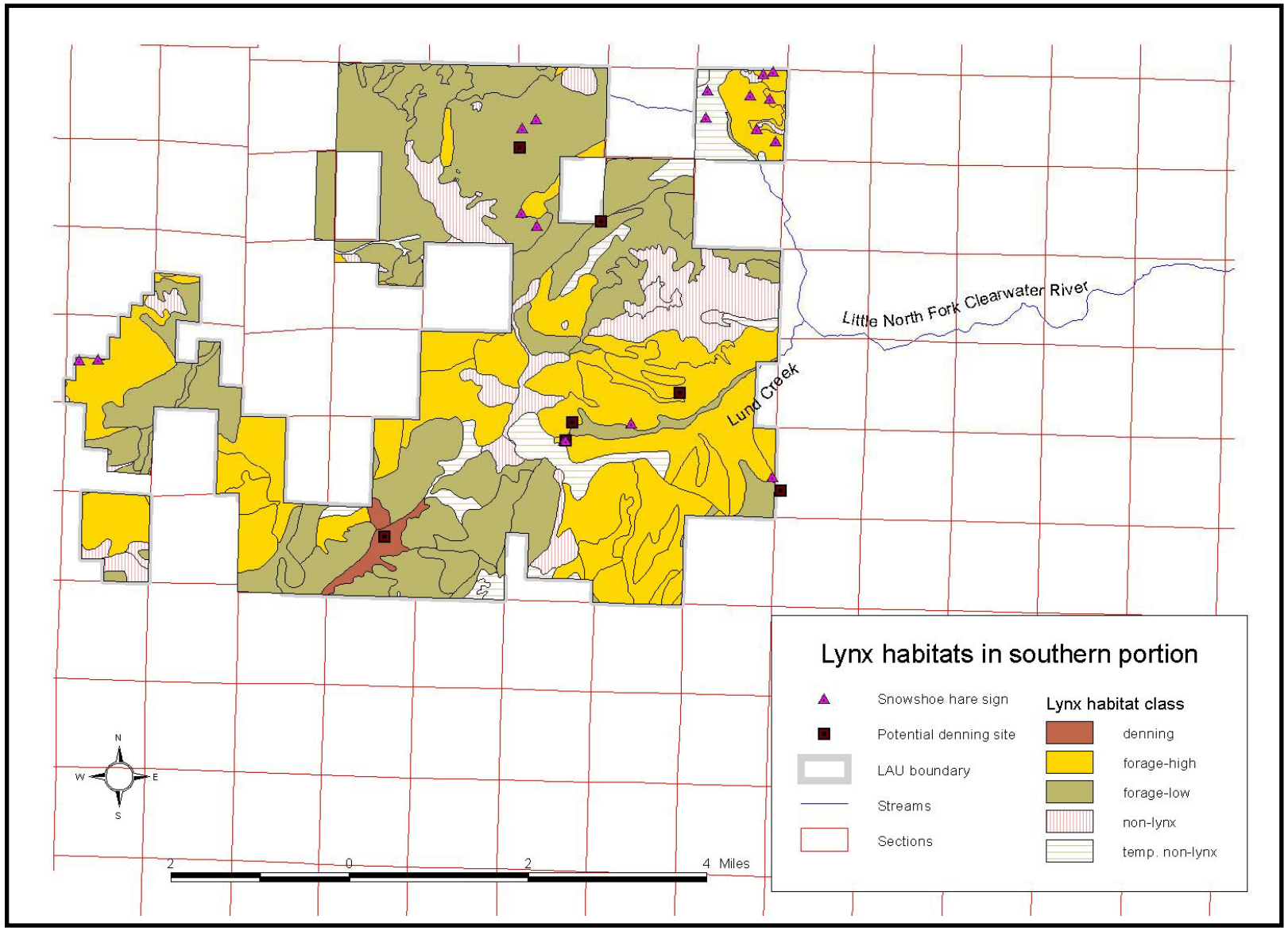

Figure 5. Lynx habitats in southern portion of study area, Grandmother Mountain, Freezeout, Upper Fishhook, and Lost Rocket LAUs. Lynx habitat classes are interpolated from 2000 through 2004 field observations. Stands actually sampled are shown in Figure 2. Snowshoe hare and potential denning site observation points are shown in relation to observed and interpolated lynx habitat.

Figure 6. A root wad present within a *Thuja plicata/Clintonia uniflora* association located in the Latour Peak study area. This association is located on a southeast-facing gentle slope at 4680 feet elevation.The stand was classified as suitable lynx denning habitat.

Figure 7. A root wad showing woody debris near entrance. Woody debris helps with thermal insulation and cover for kittens.

Figure 8. A hollowed out, charred tree cavity present within an *Abies grandis/Acer glabrum* association. The association is located on a gentle north-facing ridgecrest at 4440 feet elevation. The stand is located in theTrapper Creek area, and was classified as suitable lynx denning habitat.

Figure 9. *Tsuga mertensiana/Xerophyllum tenax, Luzula hitchcockii* association loacated near Orphan point at 6080 feet elevation. Underneath the jack-strawed dead and down timber is a bed of small braches. The northeast-facing stand was classified as suitable lynx denning habitat.

Figure 10. *Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax* association found on a moderately gentle upper position slope near Lost Lake. This southwestt-facing stand is found at 5800 feet elevation, and was classified as suitable forage-low habitat.

Figure 11. An *Abies grandis/Xerophyllum tenax* association located at 5240 feet elevation on a west-facing slope. The stand is in the St. Joe Baldy area, and was classified as suitable forage-low habitat.

Figure 12. A mid-seral *Tsuga mertensiana/Streptopus amplexifolius* association located at 5600 feet elevation on a southeast-facing moderately steep slope. The stand was classified as suitable forage-high lynx habitat.

Figure 13. *Tsuga mertensiana/Clintonia uniflora, Menziesia ferruginea* association located on a gentle southwest-facing slope at 5440 feet elevation. *Menziesia ferruginea* dominates the shrub understory and showed signs of hare browse. The stand was classified as suitable forage-high lynx habitat.

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Appendix 1. Plant associations (4 letter code, scientific and common names) observed during the 2000 through 2004 field seasons within Latour Creek, Pine Creek, Freezeout, Grandmother Mountain, Lost Rocket, Marble Mountain, St. Joe Divide West, and Upper Fishhook LAU's. Plant associations are listed alphabetically. Plant association codes and classifications follow Cooper et al. (1991).

Association Code	Scientific Name	Common Name
ABGR/ACGL	Abies grandis/Acer glabrum	grand fir/Rocky Mountain maple
ABGR/ACGL, ACGL	Abies grandis/Acer glabrum, Acer glabrum	grand fir/Rocky Mountain maple, Rocky Mountain maple
ABGR/ACGL, PHMA	Abies grandis/Acer glabrum, Physocarpus malvaceus	grand fir/Rocky Mountain maple, mallow ninebark
ABGR/ASCA	Abies grandis/Asarum caudatum	grand fir/British Columbia wildginger
ABGR/CLUN, CLUN	Abies grandis/Clintonia uniflora, Clintonia uniflora	grand fir/bride's bonnet, bride's bonnet
ABGR/CLUN, PHMA	Abies grandis/Clintonia uniflora, Physocarpus malvaceus	grand fir/bride's bonnet, mallow ninebark
ABGR/CLUN, MEFE	Abies grandis/Clintonia uniflora, Menziesia ferruginea	grand fir/bride's bonnet, rusty menziesia
ABGR/CLUN, XETE	Abies grandis/Clintonia uniflora, Xerophyllum tenax	grand fir/mallow ninebark, common beargrass
ABGR/COOC	Abies grandis/Coptis occidentalis	grand fir/Idaho goldthread
ABGR/PHMA	Abies grandis/Physocarpus malvaceus	grand fir/mallow ninebark
ABGR/VAGL	Abies grandis/Vaccinium globulare	grand fir/thinleaf huckleberry
ABGR/XETE	Abies grandis/ Xerophyllum tenax	grand fir/ common beargrass
ABGR/XETE, XETE	Abies grandis/ Xerophyllum tenax, Xerophyllum tenax	grand fir/ common beargrass, common beargrass
ABLA/ACGL	Abies lasiocarpa/Acer glabrum	subalpine fir/Rocky Mountain maple
ABLA/ACGL	Abies lasiocarpa/Acer glabrum	subalpine fir/Rocky Mountain maple
ABLA/CACA, LEGL	Abies lasiocarpa/Calamagrostis canadensis, Ledum glandulosum	subalpine fir/bluejoint, western Labrador tea
ABLA/CARO	Abies lasiocarpa/Carex rossii	subalpine fir/Ross' sedge
ABLA/MEFE	Abies lasiocarpa/Menziesia ferruginea	subalpine fir/rusty menziesia
ABLA/PHMA	Abies lasiocarpa/Physocarpus malvaceus	subalpine fir/mallow ninebark
ABLA/STAM, STAM	Abies lasiocarpa/Streptopus amplexifolius, Streptopus amplexifolius	subalpine fir/claspleaf twistedstalk, claspleaf twistedstalk
ABLA/STAM, LICA	Abies lasiocarpa/Streptopus amplexifolius, Ligusticum canbyi	subalpine fir/claspleaf twistedstalk, Canby's licorice-root
ABLA/SETR, ELGL	Abies lasiocarpa/	
ABLA/XETE, VAGL	Abies lasiocarpa/Xerophyllum tenax, Vaccinium globulare	subalpine fir/common beargrass, thinleaf huckleberry
ABLA/XETE, VASC	Abies lasiocarpa/Xerophyllum tenax, Vaccinium scoparium	subalpine fir/common beargrass, grouse whortleberry
ABLA/XETE, XETE	Abies lasiocarpa/ Xerophyllum tenax, Xerophyllum tenax	subalpine fir/common beargrass, common beargrass
AGSP/ERUM	Agropyron spicatum/Eriogonum umbellatum	Bluebunch wheatgrass/sulphur-flower buckwheat
AGTR-FEVI	Agropyron trachycaulum-Festuca viridula	slender wheatgrass- greenleaf fescue
ALSI	Allium simillimum	simil onion
CAAQ	Carex aquatilis	water sedge
CACA	Calamagrostis canadensis	bluejoint
DECE GRAM MEADOW	Deschampsia cespitosa Graminoid Meadow	tufted hairgrass Graminoid Meadow
FEID-AGSP	Festuca idahoensis/Agropyron spicatum	Idaho fescue/bluebunch wheatgrass
FEVI/ASFO	Festuca viridula/Aster foliaceus	greenleaf fescue/aster

Association Code	Scientific Name	Common Name
FEVI-AGTR	Festuca viridula-Agropyron trachycaulum	greenleaf fescue-slender wheatgrass
FEVI-CAHO	Festuca viridula-Carex hoodii	greenleaf fescue-Hood’s sedge
FEVI-CAPU	Festuca viridula-Calamagrostis purpurascens	greenleaf fescue-purple reedgrass
GRAM MEADOW	Graminoid Meadow	Graminoid Meadow
HODI/CARU	Holodiscus discolor/Calamagrostis rubescens	oceanspray/pinegrass
PHEM	Prunus emarginata	bittercherry
PIEN/GATR	Picea engelmannii/Galium triflorum	Engelmann spruce/fragrant bedstraw
PREM/AGTR?	Prunus emarginata/Agropyron trachycaulum	bittercherry/slender wheatgrass
PSME/ACGL	Pseudotsuga menziesii/Acer glabrum	Douglas-fir/Rocky Mountain maple
PSME/PHMA	Pseudotsuga menziesii/Physocarpus malvaceus	Douglas-fir/mallow ninebark
PSME/PHMA, CARU	Pseudotsuga menziesii/Physocarpus malvaceus, Calamagrostis rubescens	Douglas-fir/mallow ninebark, pinegrass
PSME/PHMA, PIPO	Pseudotsuga menziesii/Physocarpus malvaceus, Pinus ponderosa	Douglas-fir/mallow ninebark, ponderosa pine
PSME/SPBE, PIPO	Pseudotsuga menziesii/Spiraea betulifolia, Pinus ponderosa	Douglas-fir/white spirea, ponderosa pine
SPBE/AGTR	Spiraea betulifolia/Agropyron trachycaulum	white spirea/slender wheatgrass
THPL/CLUN, CLUN	Thuja plicata/Clintonia uniflora, Clintonia uniflora	western red cedar/bride's bonnet, bride's bonnet
THPL/CLUN, MEFE	Thuja plicata/Clintonia uniflora, Menziesia ferruginea	western red cedar/bride's bonnet, rusty menziesia
THPL/CLUN, XETE	Thuja plicata/Clintonia uniflora, Xerophyllum tenax	western red cedar/bride's bonnet, common beargrass
TSHE/ASCA, ASCA	Tsuga heterophylla/Asarum caudatum, Asarum caudatum	western hemlock/British Columbia wildginger, British Columbia wildginger
TSHE/CLUN, CLUN	Tsuga heterophylla/Clintonia uniflora, Clintonia uniflora	western hemlock/bride's bonnet, bride's bonnet
TSHE/CLUN, MEFE	Tsuga heterophylla/Clintonia uniflora, Menziesia ferruginea	western hemlock/bride's bonnet, rusty menziesia
TSHE/CLUN, XETE	Tsuga heterophylla/Clintonia uniflora, Xerophyllum tenax	western hemlock/bride's bonnet, common beargrass
TSHE/GYDR	Tsuga heterophylla/Gymnocarpium dryopteris	western hemlock/western oakfern
TSME/CLUN	Tsuga mertensiana/Clintonia uniflora	mountain hemlock/bride’s bonnet
TSME/CLUN, CLUN	Tsuga mertensiana/Clintonia uniflora, Clintonia uniflora	mountain hemlock/bride’s bonnet, bride’s bonnet
TSME/CLUN, MEFE	Tsuga mertensiana/Clintonia uniflora, Menziesia ferruginea	mountain hemlock/bride’s bonnet, rusty menziesia
TSME/CLUN, XETE	Tsuga mertensiana/Clintonia uniflora, Xerophyllum tenax	mountain hemlock/bride’s bonnet, common beargrass
TSME/LUHI	Tsuga mertensiana/Luzula hitchcockii	mountain hemlock/Hitchcock's smooth woodrush
TSME/MEFE, LUHI	Tsuga mertensiana/Menziesia ferruginea, Luzula hitchcockii	mountain hemlock/rusty menziesia, Hitchcock's smooth woodrush
TSME/MEFE, MEFE	Tsuga mertensiana/Menziesia ferruginea, Menziesia ferruginea	mountain hemlock/rusty menziesia, rusty menziesia
TSME/MEFE, XETE	Tsuga mertensiana/Menziesia ferruginea, Xerophyllum tenax	mountain hemlock/rusty menziesia, common beargrass
TSME/STAM, MEFE	Tsuga mertensiana/Streptopus amplexifolius, Menziesia ferruginea	mountain hemlock/claspleaf twistedstalk, rusty menziesia
TSME/VAME, XETE	Tsuga mertensiana/Vaccinium membranaceum, Xerophyllum tenax	mountain hemlock/thinleaf huckleberry, common beargrass
TSME/XETE	Tsuga mertensiana/Xerophyllum tenax	mountain hemlock/common beargrass

Association Code	Scientific Name	Common Name
TSME/XETE, LUHI	Tsuga mertensiana/Xerophyllum tenax, Luzula hitchcockii	mountain hemlock/common beargrass, Hitchcock's smooth woodrush
TSME/XETE, MEFE	Tsuga mertensiana/Xerophyllum tenax, Menziesia ferruginea	mountain hemlock/common beargrass, rusty menziesia
TSME/XETE, VASC	Tsuga mertensiana/Xerophyllum tenax, Vaccinium scoparium	mountain hemlock/common beargrass, grouse whortleberry
TSME/XETE, XETE	Tsuga mertensiana/Xerophyllum tenax, Xerophyllum tenax	mountain hemlock/common beargrass, common beargrass
VAME/FEVI	Vaccinium membranaceum/Festuca viridula	thinleaf huckleberry/greenleaf fescue
VAME/XETE	Vaccinium membranaceum/Xerophyllum tenax	thinleaf huckleberry/common beargrass
XETE/CAGE	Xerophyllum tenax/Carex geyeri	common beargrass/Geyer’s sedge

Appendix 2. Detailed summary of field inventory results. Selected data collected on ecology plots during the 2000 through 2004 field seasons are listed with data for spatially associated vegetation map polygons. Data for the *polygon label* and *assigned cover class* are from Upper Columbia-Salmon Clearwater District (2000) or (for entries beginning "stjo") Landscape Dynamics Lab (2002). Lynx habitat classes are defined in Box 1. Cover class codes correspond toTable 1. Plant association codes and classification follows Cooper et al. (1991) and corresponds with Appendix 1. The plant community nomenclature applied here is: plant association refers to the potential natural vegetation that occupies a habitat type. Keys to structural and ecological condition codes are given at the end of the table.

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
000728-1051	TSME/MEFE, XETE		mid	mt	A	ROP417	non-lynx	7300	7300
000728-1135	TSME/MEFE, XETE		early-mid	tbdae	A	ROP420	non-lynx	4220	3202
000728-1216	TSME/MEFE, MEFE		mid	mt	A	ROP948	non-lynx	3203	3203
000728-1322	TSME/STAM, MEFE		mid	mt	A	ROP488	forage-low	4208	4220
000728-1520	TSME/MEFE, LUHI		mid	mt	A	ROP500	forage-high	4208	4220
000728-1713	TSME/XETE, LUHI		late	lt	A	ROP490	non-lynx	7300	3104
000728-1734	TSME/MEFE, LUHI		late	lt	A	ROP985	forage-high	4220	4220
000728-1808	TSME/XETE, LUHI		late	lt	A	ROP984	non-lynx	3104	3104
000731-1655	THPL/CLUN, CLUN		mid	mt	A	ROP808	forage-high	4208	4221
000731-1735	TSME/CLUN, MEFE		mid-late	lt	A	ROP810	forage-high	4221	4221
000731-1818	TSME/CLUN, MEFE		mid-late	lt	A	ROP810	forage-high	4221	4221
000731-1909	ABGR/COOC		mid		A	ROP813	forage-high	4225	4225
000801-1722	TSME/CLUN, MEFE		mid	mt	A	ROP830	forage-high	4220	4220
000801-1848		XETE	late	hedae	A	ROP401	non-lynx	3104	3104
000801-1946	CAAQ		late	hedae	A	ROP401	non-lynx	3104	3104
000801-2017	TSME/MEFE, XETE		mid	po	A	ROP405	forage-high	4220	4220
000802-0931	TSME/XETE, XETE		mid	mt	A	ROP399	forage-high	4220	4220
000802-1051	TSME/XETE		early-mid	tbdau	A	ROP837	non-lynx	3203	3203
000802-1131	TSME/MEFE, XETE		mid	mt	A	ROP399	forage-high	4220	4220
000802-1157	TSME/MEFE, LUHI		mid	mt	A	ROP900	forage-high	4208	4220
000802-1225	TSME/MEFE, LUHI		mid	mt	A	ROP325	forage-high	4220	4220
000802-1415	TSME/XETE, LUHI		mid	mt	A	ROP325	forage-high	4220	4220
000802-1443	TSME/CLUN, XETE		mid	mt	A	ROP839	forage-high	4220	4220

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
000802-1550	ALSI		late	tbdae	A	ROP839	forage-high	4220	4220
000802-1636	TSHE/CLUN, MEFE		mid	mt	A	ROP838	forage-high	4220	4220
000802-1719	TSHE/CLUN, MEFE		mid	mt	A	ROP830	forage-high	4220	4221
000802-1759	TSHE/GYDR		mid		A	ROP830	forage-high	4220	4221
000802-1818	TSHE/CLUN, CLUN		mid	mt	A	ROP325	forage-high	4220	4221
000802-1848	THPL/CLUN, XETE		mid	mt	A	ROP325	forage-high	4220	4221
000802-1919	TSHE/CLUN, CLUN		mid-late	mt	A	ROP325	forage-high	4220	4221
000802-1951	TSME/MEFE, XETE		mid	mt	A	ROP325	forage-high	4220	4220
000802-2008	TSME/XETE, LUHI		mid	mt	A	ROP325	forage-high	4220	4220
000803-1619	TSME/MEFE, XETE		late	ltdau	A	ROP187	forage-high	4229	4220
000803-1920		XETE	late	hedae	A	TWI293	non-lynx	3104	3104
000803-1956		FEVI	late	hedae	A	TWI293	non-lynx	3104	3104
000804-1255	TSME/LUHI		pnc		A	TWI324	non-lynx	3104	3104
000804-1349	TSME/XETE, XETE		late	mt	A	TWI324	non-lynx	3104	3104
000804-1359	ABLA/XETE, VASC		mid	lt	A	TWI324	non-lynx	3104	3104
000804-1436	TSME/XETE, XETE		late	lt	A	TWI794	forage-high	4208	4204
000804-1532	TSME/XETE, XETE		late	ltdae	A	TWI794	forage-high	4208	4204
000804-1654		FEVI	late	hedae	A	TWI794	non-lynx	4208	3104
000804-1747		XETE	late	hedae	A	TWI324	non-lynx	3104	3104
000804-1848		XETE	late	hedae	A	TWI324	non-lynx	3104	3104
000823-1040	TSME/XETE, LUHI		mid	mtdae	A	TWI317	forage-high	4220	4203
000823-1250	TSME/XETE, XETE		mid	mt	A	TWI317	forage-high	4220	4203
000823-1315	TSME/XETE, XETE		mid-late	mt	A	TWI317	forage-high	4220	4203
000823-1350	TSME/MEFE, MEFE		late	lt	A	TWI332	forage-high	4208	4204
000823-1515	TSME/MEFE, XETE		mid	po	A	TWI332	forage-high	4208	4208
000823-1540	TSHE/GYDR		late		A	TWI316	forage-high	6101	6101
000823-1645	TSME/CLUN, XETE		early-mid	mt	A	TWI316	forage-high	6101	6101
000823-1720	TSME/XETE, XETE		early	mt	A	TWI314	forage-high	4220	4203

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
000823-1745	TSME/CLUN, MEFE		early-mid	mt	A	TWI314	forage-high	4220	4203
000823-1830	TSME/CLUN, XETE		early-mid	mt	A	TWI314	forage-high	4220	4203
000823-1930	TSME/XETE, XETE		early-mid	mt	A	TWI314	forage-high	4220	4203
000824-0925	TSME/XETE, VASC		mid-late	mt	AB	TWI711	forage-high	4220	4203
000824-1005	TSME/XETE, XETE		early mid	mtdae	AB	TWI290	forage-high	4220	4203
000824-1200	TSME/XETE, XETE		early-mid	mt	A	TWI290	forage-high	4220	4203
000824-1305	TSME/XETE, XETE		early-mid	mt	B	TWI748	forage-high	4203	4225
000824-1335	TSME/CLUN, CLUN		mid	lt	A	TWI294	forage-high	4220	4223
000824-1405	TSME/CLUN, CLUN		early-mid	mt	A	TWI295	forage-high	3203	3203
000824-1605	TSHE/CLUN, CLUN		early-mid	mt	A	TWI310	forage-high	4221	4225
000824-1650	TSME/CLUN, CLUN		early-mid	mt	A	TWI310	forage-high	4221	4203
000824-1735	ABGR/CLUN, XETE		early-mid	mt	A	TWI310	forage-high	4221	4203
000824-1815	ABGR/CLUN, CLUN		late	lt	A	TWI717	forage-high	4221	4221
000824-1855	TSME/CLUN, MEFE		early-late	lt	A	TWI302	forage-high	4220	4221
000824-1930	TSHE/CLUN, XETE		late	lt	B	TWI251	forage-high	4221	4221
000825-0845		XETE	late	hedae	A	TWI289	non-lynx	7300	3104
000825-0935		FEVI	late	hedae	A	TWI289	non-lynx	7300	3104
000825-1020		CAGE	late	hedae	A	TWI289	non-lynx	7300	3104
000825-1130		FEVI	late	hedae	A	TWI709	non-lynx	3104	3104
000825-1450	TSHE/ASCA, ASCA		mid-late	mt	AB	MAS726	forage-low	4221	4221*
000825-1525	TSHE/CLUN, CLUN		mid	mt	B	MAS726	forage-low	4221	4221*
000825-1615	ABGR/CLUN, PHMA		mid-late	mt	AB	MAS243	forage-high	4221	4221
000825-1700	TSHE/CLUN, CLUN		early-mid	mt	A	MAS255	forage-high	4221	4221
000825-1730	THPL/CLUN, CLUN		mid	mt	A	MAS243	forage-high	4221	4221
000825-1800	TSHE/ASCA, ASCA		early-mid	mt	B	MAS255	forage-high	4221	4221
000825-1900	TSHE/CLUN, MEFE		mid	mt	B	MAS264	forage-high	4221	4221
000825-1935	TSME/XETE, MEFE		mid	po	A	MAS804	forage-high	4225	4220
000826-0655	TSME/XETE, MEFE		mid	po	B	MAS804	forage-high	4225	4220

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
000826-0720	ABGR/ACGL, ACGL		early	tbdau	C	MAS752	temp. non-lynx	3203	3203
000826-0755	ABGR/ACGL, ACGL		mid	mt	A	MAS269	forage-high	4222	4225
000826-0825	TSME/XETE, MEFE		mid	mt	B	MAS804	forage-high	4225	4220
010912-1447	TSHE/CLUN, CLUN		mid	mtdae	AB	ROP239	forage-low	4221	4221
010912-1539	TSHE/CLUN, CLUN		mid	mtmbu	AB	ROP239	forage-low	4221	4221
010912-1618	TSHE/CLUN, CLUN		mid	mtmbu	AB	ROP239	forage-high	4221	4221
010913-0945	TSME/XETE, XETE		mid	mtmbe	AB	ROP399	forage-high	4220	3203
010913-0946	TSME/XETE, XETE		mid-late	mtmbu	A	ROP399	forage-low	4220	3203
010913-1006	TSME/XETE, XETE		mid	mtmbe	AB	ROP399	forage-high	4220	3203
010913-1103	TSME/XETE, XETE		mid	mtmbe	AB	ROP399	forage-low	4220	3203
010913-1105	TSME/XETE, XETE		mid	mtmbe	A	ROP399	forage-low	4220	3203
010913-1121	TSME/XETE, XETE		mid	mtmbe	AB	ROP399	forage-low	4220	3203
010913-1500	TSME/XETE, XETE		mid	mtmae	A	MAS077	forage-high	4220	4220
010913-1508	ABLA/XETE, XETE		mid	mtmbe	A	MAS077	forage-low	4220	4220
010913-1528	ABLA/PHMA		mid	mtdae	A	MAS077	forage-low	4220	4220
010913-1551	TSME/XETE, XETE		mid	mtmbe	AB	MAS077	forage-low	4220	4220
010914-1149	ABGR/ACGL, PHMA		mid	mtdae	AB	MAS077	forage-low	4220	4220
010914-1246	ABGR/ACGL, PHMA		mid	ltdae	AB	MAS033	forage-high	4220	4221
010914-1323	ABLA/PHMA		mid	ltdae	AB	MAS033	forage-low	4220	4221
010914-1349	ABGR/ACGL, PHMA		mid	ltmau	AB	MAS056	forage-high	4222	4222
010914-1503	THPL/CLUN, MEFE		mid	ltdae	AB	MAS070	forage-low	4221	4221
010914-1520	ABGR/ACGL, PHMA		mid	ltmbu	A	MAS070	forage-low	4221	4221
010914-1614	PSME/PHMA, PIPO		mid	ltmau	AB	MAS068	forage-high	4222	4222
010914-1723	TSME/XETE, XETE		mid	mtmbu	AB	MAS101	forage-high	4221	4220
010914-1730	TSME/XETE		mid	mtdau	A	MAS101	forage-high	4221	4220
010914-1745	ABLA/XETE, VAGL		mid-late	mtmbu	B	MAS676	forage-high	4222	4220
010914-1810	TSME/XETE, XETE		mid	mtdau	A	MAS101	forage-high	4221	4220
010914-1814	TSME/XETE, XETE		mid-late	mtmbu	A	MAS654	forage-high	4220	4220

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
010914-1850	TSME/XETE, XETE		mid-late	mtmbu	B	MAS654	forage-high	4220	4220
010915-1025	ABLA/XETE, XETE		mid	pombe	AB	MAS114	forage-high	4220	4220
010915-1030	TSME/XETE, XETE		mid	pombe	A	MAS114	forage-low	4220	4302
010915-1500	TSME/MEFE, MEFE		mid	mtmbu	A	MAS163	forage-high	4220	4220
010915-1535	TSME/MEFE, MEFE		mid	pombu	AB	MAS163	forage-high	4220	4220
010915-1539	TSME/MEFE, XETE		mid-late	mtmbu	A	MAS717	forage-high	4220	4220
010915-1620	TSME/MEFE, XETE		mid	mtmbu	A	MAS573	forage-high	4220	4220
010915-1621	TSME/XETE		early-mid	mtmbu	A	MAS573	forage-high	4220	4220
010915-1659	TSME/XETE, XETE		mid	mtmbu	A	MAS163	forage-low	4220	4220
010915-1715	TSME/XETE, XETE		mid	missing	A	MAS163	forage-high	4220	4220
010915-1800	TSME/XETE, XETE		mid	mtdau	A	MAS408	forage-high	4221	4221
020820-1218	TSME/XETE, XETE		mid	mtmbu	A	ROP928	non-lynx	4225	4215
020820-1351	TSME/XETE, XETE		mid	mtmbu	A	ROP929	forage-high	4203	4221
020820-1519	TSME/XETE, XETE		mid	mtmae	A	ROP989	forage-low	4220	4221
020820-1624	ABGR/CLUN, XETE		mid	mtmbu	A	ROP970	forage-low	4225	4225
020820-1658	ABGR/VAGL		mid	mtmbe	A	ROP452	forage-low	4222	4225
020820-1740	ABGR/VAGL		mid	ltobu	A	ROP452	temp. non-lynx	4222	4225
020820-1803	ABGR/CLUN. XETE		mid	mtmae	A	ROP969	forage-low	4225	4225
020820-1832	ABGR/CLUN, PHMA		early-mid	tbdau	A	ROP447	temp. non-lynx	3202	3203
020820-1918	TSME/XETE, XETE		mid	mtmau	A	ROP450	forage-low	4225	4225
020820-1956	TSME/MEFE, MEFE		mid	mtdau	A	ROP929	forage-high	4203	4233
020821-1110	VAME/XETE		late	maobe	A	ROP390	non-lynx	3104	3104
020821-1158	TSME/XETE, XETE		early-mid	pooau	A	ROP390	temp. non-lynx	3104	3104
020821-1221	TSME/XETE, XETE		mid	mtobu	A	ROP388	forage-high	4229	4220
020821-1251	TSME/XETE, XETE		mid	mtmbu	A	ROP388	forage-high	4229	4221
020821-1330	TSME/XETE, XETE		mid	mtmau	A	ROP388	forage-high	4229	4220
020821-1501	HODI/CARU		late	mbnae	A	ROP386	non-lynx	3104	3104
020821-1540	VAME/XETE		late	lsnae	A	ROP386	non-lynx	3104	3104

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
020821-1720	TSME/XETE, XETE		mid	mtmbu	A	ROP385	forage-high	4222	4221
020821-1754	VAME/FEVI		mid	mbmae	A	ROP386	non-lynx	3104	3104
020821-1830	TSME/MEFE, XETE		mid-late	mtmbu	A	ROP386	forage-high	3104	4233
020821-1851	TSME/XETE, XETE		mid	mtdau	A	ROP892	forage-high	3203	4220
020822-1220	TSME/XETE, LUHI		late	gtmbu	A	SJB089	forage-low	4221	4204
020822-1326	TSME/MEFE, LUHI		late	gtmau	A	ROP498	denning	4208	4204
020822-1441	XETE/CAGE		late	hedae	A	TWI439	non-lynx	3104	3104
020822-1531	TSME/XETE, LUHI		mid	mtmbu	A	ROP498	forage-high	4208	4204
020822-1622	TSME/XETE, VASC		late	ltmau	A	ROP982	forage-high	3104	4204
020822-1648	FEVI-AGTR		late	hedae	A	ROP980	non-lynx	3104	3101
020822-1812	TSME/XETE, XETE		late	ltmau	A	SJB081	forage-high	4221	4220
020822-1835	TSME/XETE, XETE		late	ltmbu	AB	SJB089	forage-low	4221	4204
020822-1856	TSME/XETE, XETE		mid-late	mtoau	AB	SJB088	non-lynx	4225	4220
020822-1925	TSME/MEFE, XETE		mid	mtmbu	A	SJB089	forage-high	4221	4220
020823-1002	TSME/XETE, VASC		mid-early	mtmau	A	ROP946	forage-high	4220	4220
020823-1027	TSME/XETE, XETE		mid	mtmbu	A	ROP946	forage-high	4220	4220
020823-1102	TSME/XETE, XETE		mid	mtmbu	A	ROP944	forage-high	4220	4220
020823-1144	ABGR/ACGL, ACGL		late	ltmbu	A	SJB094	forage-high	4225	4207
030801-1235	TSHE/GYDR?		mid	mtdae	A	TWI763	forage-low	4221	4221
030801-1320	THPL/CLUN, CLUN		mid	mtdae	A	TWI762	forage-low	4221	4221
030801-1415	ABGR/COOC		mid	mtdae	A	TWI763	forage-low	4221	4221
030801-1440	ABGR/COOC		mid	mtdae	A	TWI365	forage-low	4227	4225
030801-1505	TSHE/CLUN, CLUN		mid	mtdae	A	TWI762	forage-low	4221	4221
030801-1530	TSHE/CLUN, TETE		mid	mtmbe	A	TWI356	forage-low	4226	4225
030801-1615	TSME/XETE, XETE		early-mid	mtoae	A	TWI358	temp. non-lynx	3202	3202
030801-1650	TSME/XETE, XETE		early-mid	mtoae	A	TWI358	temp. non-lynx	3202	3202
030801-1800	GRAM MEADOW		late	hedae	A	TWI363	non-lynx	3104	3104
030801-1850	TSME/XETE, XETE		late	mtdae	A	TWI360	forage-high	4229	4204

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
030802-1125	TSME/XETE, LUHI		late	ltmbe	A	TWI665	forage-high	4208	4204
030802-1220	TSME/XETE, XETE		late	mtmbe	A	TWI665	denning	4208	4204
030802-1330	TSME/MEFE, XETE		late	mtmbe	A	TWI665	forage-low	4208	4204
030802-1435	TSME/XETE, XETE		late	mtmae	A	TWI247	forage-high	4220	4220
030802-1455	TSME/MEFE, XETE		late	mtmae	A	TWI247	temp. non-lynx	4220	4204
030802-1520	TSME/XETE, LUHI		late	mtmbe	A	TWI247	forage-low	4220	4220
030802-1545	TSME/XETE, XETE		late	mtmbe	A	TWI247	forage-low	4220	4220
030802-1615	TSME/XETE, XETE		late-pnc	ltmbe	A	TWI247	forage-low	4220	4204
030802-1700	TSME/MEFE, XETE		mid	pomae	A	TWI298	forage-high	4208	4204
030802-1720	TSME/MEFE, XETE		late	ltmbe	A	TWI298	forage-high	4208	4204
030802-1800	TSME/XETE, XETE		mid	mtmae	A	TWI714	forage-high	4220	4220
030803-1115	FEVI/ASFO		late	hedae	A	TWI297	non-lynx	3104	3104
030803-1315	PREM/AGTR		late	maoae	A	TWI297	non-lynx	3104	3104
030803-1425	SPBE/AGTR		late	mamae	A	TWI297	non-lynx	3104	3104
030803-1540	FEVI-CAPU		late	lsoae	A	TWI297	non-lynx	3104	3104
030803-1650	FEVI-AGTR		late	hedae	A	TWI297	non-lynx	3104	3104
030804-1638	ABLA/CACA, LEGL		mid	pombu	B	WDM033	forage-high	4204	4208
030804-1717	TSME/MEFE, XETE		mid	pomae	B	WDM033	forage-high	4204	3104
030804-1808	TSME/STAM, MEFE		late	ltmbu	B	WDM031	forage-high	4220	4220
030805-1105	TSME/XETE, LUHI		mid	mtdau	A		forage-low		
030805-1142	TSME/MEFE, LUHI		late	ltdau	A	WDM041	forage-low	3201	4204
030805-1200	ABLA/XETE, XETE		late	mtoae	A		non-lynx		
030805-1243	TSME/XETE, VASC		mid	mtmbu	A	WDM043	forage-low	4204	4208
030805-1317	TSME.XETE, XETE		late	ltmbu	A	WDM043	forage-low	4204	4204
030805-1345	TSME/MEFE, LUHI		mid-late	ltmbu	A	WDM043	forage-high	4204	4204
030805-1516	TSME/XETE, LUHI		mid	mtmau	A	WDM047	forage-high	7300	4204
030805-1640	PHEM		late		A	WDM047	non-lynx	7300	3203
030805-1742	TSME/MEFE, LUHI		late	gtmbu	A		forage-low		

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030805-1834	TSME/LUHI		mid	mtmbu	A		forage-low		
030805-1915	FEVI-CAHO		late	hedae	A	WDM074	non-lynx	4204	3104
030805-1956	TSME/LUHI		mid	mtmbu	A	WDM074	forage-high	4204	4204
030806-0620	FEVI-CAHO		late	hedae	A	WDM090	non-lynx	4204	3104
030806-1010	TSME/CLUN		mid	mtmbu	BC	WDM023	temp. non-lynx	4208	4208
030806-1023	TSME/CLUN, MEFE		mid	pombu	AB	WDM031	forage-high	4220	4220
030806-1040	DECE GRAM MEADOW		late	hedae	AB	WDM034	non-lynx	3203	3203
030806-1057	TSME/CLUN, MEFE		mid	mtdau	AB	WDM033	forage-low	4204	4204
030806-1105	ABLA/CACA, LEGL		mid	mtmae	A	WDM023	forage-high	4208	3104
030806-1120	TSME/CLUN, MEFE		mid-late	mtmbu	AB	WDM023	forage-high	4208	4204
030806-1155	TSME/CLUN, MEFE		mid	mtmbu	B	WDM023	forage-high	4208	4204
030806-1310	TSME/CLUN, CLUN		mid	mtmae	B	WDM036	temp. non-lynx	4220	4220
030806-1324	TSME/CLUN, MEFE		mid	mtmbu	A	WDM036	forage-high	4220	4220
030806-1330	TSME/CLUN, MEFE		mid	mtobe	A	WDM036	temp. non-lynx	4220	4220
030806-1345	ABLA/STAM, STAM		mid	mtmau	B	WDM036	non-lynx	4220	4220
030806-1440	ABLA/STAM, LICA		mid	mtobu	AB	WDM036	temp. non-lynx	4220	4220
030806-1450	TSME/MEFE		early-mid	poobu	C	WDM036	temp. non-lynx	4220	4220
030806-1505	TSME/STAM, MEFE		mid	mtmbu	A	WDM036	forage-high	4220	4220
030806-1536	TSME/STAM, MEFE		early	pooau	B	WDM036	temp. non-lynx	4220	4202
040803-1000	TSME/MEFE, LUHI		mid-late	mtmau	A		forage-high		4220
040803-1035	TSME/LUHI		mid-late	ltmbu	A		denning		4220
040803-1109	TSME/XETE, LUHI		mid	mtmbu	C		forage-low		4220
040803-1149	TSME/XETE, XETE		mid	mtmbu	B		forage-low		4220
040803-1150	TSME/MEFE, LUHI		late	ltmbu	A	WDM087	forage-high	4204	4220
040803-1223	TSME/XETE, XETE		mid	mtdau	A	GRM005	forage-high	4208	4208
040803-1450	TSME/CLUN, MEFE		mid-late	mtobu	A	WDM091	forage-high	4204	4220
040803-1551	TSME/LUHI		late	mtmae	A	WDM101	forage-low	4204	4220
040803-1715	TSME/XETE, XETE		mid-late	mtobu	A		temp. non-lynx		4220

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
040803-1745	ABLA/CARO		mid	sanan	A	WDM110	temp. non-lynx	3203	3203
040803-1819	TSME/LUHI		mid-late	mtdau	A	WDM101	forage-low	4204	4220
040803-1830	TSME/VAME, XETE		pnc	mtdau	A	WDM096	forage-low	4204	4204
040803-1905	TSME/XETE, LUHI			ltdau	A	WDM102	denning	3203	4204
040804-0930	TSME/MEFE, LUHI		early-late	mtmbu	A	WDM087	forage-high	4204	4204
040804-1010	TSME/MEFE, LUHI		mid-late	ltobu	A	WDM087	denning	4204	4204
040804-1120	TSME/MEFE, LUHI		late	mtmbe	A	WDM077	denning	4221	4220
040804-1130	TSME/CLUN, MEFE		mid	mtdau	A	WDM040	forage-high	4233	4233
040804-1216	TSME/STAM		late	gtobu	A	WDM040	forage-high	4233	4233
040804-1245	TSME/CLUN, MEFE		late	ltmbu	A	WDM040	forage-high	4233	4233
040804-1323	TSME/MEFE, LUHI		late-pnc	ltdau	A	WDM040	denning	4233	4233
040804-1415		CACA	early	hedae	A	WDM077	non-lynx	4221	3101
040804-1434	TSME/XETE, XETE		mid	mtdau	A	WDM040	forage-low	4233	4233
040804-1507	TSME/STAM		mid	mtobu	A	WDM037	forage-high	4208	4220
040804-1510	TSME/MEFE, LUHI		late	ltdae	A	WDM077	forage-high	4221	4220
040804-1608	TSME/CLUN, MEFE		late	ltmau	B	WDM040	forage-high	4233	4233
040804-1630	ABLA/MEFE		early	mtnan	A	WDM077	denning	4221	4220
040804-1727	TSME/MEFE, XETE		pnc	gtmbu	A	WDM129	forage-high	4204	4204
040804-1730	TSME/MEFE, XETE		late	mtmbu	A	WDM077	forage-high	4221	4233
040804-1747	TSME/MEFE, XETE		pnc	ltobu	A		denning		4220
040804-1756	TSME/XETE, XETE		late	ltmau	A	WDM129	forage-low	4204	4204
040804-1835	PIEN/GATR		late	mtmbu	A	WDM077	forage-low	4221	4220
040804-1836	TSME/CLUN, MEFE		late	mtmbu	B	WDM048	forage-low	4208	4220
040804-1846	TSME/MEFE, XETE		mid	mtobu	BC	WDM130	forage-high	4233	4220
040805-1258	TSME/XETE, VASC		early-mid	pomau	A	ROP943	forage-high	3203	4220
040805-1301	TSME/XETE, XETE		early	pooau	AB	ROP401	temp. non-lynx	3104	4220
040805-1302	ABGR/XETE		mid?	pooae	A	ROP401	forage-low	3104	4220
040805-1343	TSME/XETE, LUHI		early-mid	pooau	A	ROP401	forage-high	3104	3201

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
040805-1351	ABGR/XETE		mid?	mtmae	B	ROP940	forage-low	4225	4220
040805-1352	ABLA/XETE		mid	pombu	A	ROP938	forage-high	3202	4220
040805-1431	TSME/MEFE, XETE		early-mid	mtmau	A	ROP399	forage-high	4220	4220
040805-1439	TSME/XETE, XETE		early	mtmbu	A	ROP942	forage-high	4222	4222
040805-1440	ABGR/XETE		early-mid	mtmbe	A?	ROP940	forage-low	4225	4222
040805-1629	ABGR/CLUN, MEFE		mid-late	mtmbu	A	ROP930	forage-low	4225	4220
040805-1640	TSME/CLUN, MEFE		mid	mtmbu	A	ROP930	forage-low	4225	4221
040805-1714	TSME/XETE, XETE		mid	mtmbe	A	ROP464	forage-low	3201	4221
040805-1722	ABGR/ACGL, ACGL		late	pooae	A	ROP464	forage-high	3201	4221
040806-0846	ABGR/CLUN, XETE		mid-late	mtdau	A	SJB063	forage-low	4220	4207
040806-0945	ABLA/ACGL		early-mid	mtobu	A		forage-high		4221
040806-1003	ABGR/CLUN, XETE		mid	mtdau	A		forage-high		4221
040806-1013	ABGR/ACGL		mid	mtmau	A	SJB063	forage-high	4220	4221
040806-1014	ABGR/XETE		mid-late	mtdae	A	SJB063	temp. non-lynx	4220	4221
040806-1046	ABGR/ACGL		mid	mtmau	A	SJB063	forage-high	4220	4221
040806-1051	ABGR/XETE		mid	mtdae	A	SJB063	temp. non-lynx	4220	4221
040806-1053	PSME/PHMA		early	mtobe	A		temp. non-lynx		4221
040806-1128	ABGR/XETE		mid	mtmau	A	SJB063	temp. non-lynx	4220	4221
040806-1140	ABGR/ACGL		mid	gtmae	A	SJB063	foarge-low	4220	4221
040806-1532	ABGR/COOC		early-mid	gtmau	A	ROP276	forage-low	4221	4221
040806-1543	ABGR/CLUN, XETE		mid	mtdau	A	ROP276	forage-low	4221	4221
040806-1556	ABGR/CLUN, XETE		mid	samae	A	ROP276	forage-low	4221	4221
040806-1618	ABGR/CLUN		early	mtmbu	A	ROP276	forage-high	4221	4221
040806-1635	ABGR/XETE		mid	mtmbu	A	ROP359	temp. non-lynx	7300	4221
040806-1707	THPL/CLUN			mtdau	A	ROP276	denning	4221	4221
040806-1717	ABGR/ACGL		mid	mtmau	A	ROP337	forage-high	4229	4221
040806-1750	THPL/CLUN		mid-late	ltdau	A	ROP276	denning	4221	4221
040806-1801	ABGR/ACGL		mid	mtmbu	A	ROP276	forage-high	4221	4221

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
040807-1247	TSME/XETE, XETE		early-mid	mtmbu	A	TWI723	forage-high	4229	4220
040807-1302	ABGR/PHMA		mid	ltmau	A	TWI239	temp. non-lynx	4222	4221
040807-1319	TSME/XETE, XETE		early-mid	poobu	A	TWI236	forage-high	4229	4220
040807-1400	ABGR/CLUN, XETE		early	mtmbu	A	TWI236	forage-low	4229	4221
040807-1450	ABGR/ACGL, ACGL		mid	mtmau	A	TWI234	forage-high	4222	4221
040807-1537	ABGR/ACGL, ACGL		mid	ltmbu	A	TWI212	denning	4225	4221
040807-1639	ABGR/ACGL, ACGL		early-mid	mtmbu	A		forage-low		4221
040808-1000	PSME/PHMA?		early	mtmau	AB	TWI790	forage-high	4222	4222
040808-1108	ABGR/ACGL, PHMA		mid-late	mtdau	A	TWI376	denning	4222	4221
040808-1110	PSME/PHMA, PIPO		mid	mtmbu	B	TWI790	temp. non-lynx	4222	4222
040808-1155	ABGR/ASCA		mid	mtdae	A	TWI377	forage-low	4225	4212
040808-1207	PSME/PHMA		mid	mtdau	A	TWI790	forage-high	4222	4222
040808-1304	AGSP/ERUM		mid	hedau	A	TWI376	non-lynx	4222	3101
040808-1345	ABGR/ASCA		late		A	TWI821	forage-low	4222	4207
040808-1350	PSME/ACGL		late	mtmbu	B	MAS256	denning	4221	
040808-1530		FEID	mid	mbobe	B	TWI791	non-lynx	3202	3202
040808-1608	ABGR/ASCA		mid		A	TWI822	forage-high	4225	4212
040808-1715	PSME/PHMA, PIPO		early	saoae	B	TWI790	temp. non-lynx	4222	4220
040808-1734	ABGR/ACGL, PHMA		early-mid	mtdae	A	TWI376	forage-low	4222	4212
040809-1157	ABGR/COOC		early-mid	mtmbu	A	MAS328	forage-high	4225	4221
040809-1200	TSME/MEFE, XETE		late	mtdau	A	MAS282	denning	4221	4221
040809-1230	TSME/XETE, XETE		mid	ltmbu	A		forage-high		4220
040809-1238	ABGR/ACGL, ACGL		late	ltdau	A	MAS282	denning	4221	4221
040809-1347	ABGR/COOC		mid	mtmbu	A	MAS800	forage-high	4221	4221
040809-1415	PSME/ACGL		mid	gtmbu	A	MAS282	forage-low	4221	4221
040809-1456	ABGR/COOC		late	ltdae	A	MAS321	forage-low	4225	4207
040809-1512	PSME/PHMA, CARU		early	ltoau	A	MAS740	temp. non-lynx	4225	4222
040809-1600	PSME/PHMA		late	mtmbu	A	MAS295	forage-high	4221	4220

Plot id	Plant association	Series	Seral status	Structural condition	Ecological Condition	Polygon label	Lynx_habit	Assigned cover class	Observed cover class
040809-1642	ABGR/COOC		early-mid	mtdau	A	MAS318	forage-high	4221	4221
040809-1648	PSME/SPBE, PIPO		early/mid	mtmbe	B	MAS295	forage-low	4221	4212
040810-0904	ABLA/ACGL		mid	ltmau	A		forage-high		4221
040810-0937	TSME/XETE, XETE		late	mtdau	A	MAS418	forage-low	4225	4204
040810-0940	PSME/PHMA, SMST		early	mtmau	A	MAS416	forage-high	7300	4222
040810-1005	TSME/XETE, XETE		mid-late	mtdau	A	MAS406	forage-low	3202	4220
040810-1015	TSME/CLUN, XETE		mid-late	ltdau	A	MAS421	forage-low	4225	4225
040810-1125	TSME/XETE		mid	mtmbu	A	MAS406	temp. non-lynx	3202	4220
040810-1152	ABGR/ACGL, ACGL		mid	mtdau	AB	MAS422	forage-low	4222	4225
040810-1158	ABGR/ACGL, ACGL		mid	mtmbu	AB	MAS423	forage-high	4222	4221
040810-1215	TSME/XETE		early	mtmbu	A	MAS395	temp. non-lynx	4221	4221
040810-1312	ABGR/XETE, XETE		early	mtmbe	A	MAS395	forage-low	4221	4221
040810-1331	TSME/XETE		mid	mtdau	A	MAS403	forage-low	4221	4220
040810-1408	TSME/MEFE, XETE		early-mid	mtmbu	A	MAS403	forage-low	4221	4220
040810-1420	ABLA/XETE		early	mtobu	A	MAS405	forage-high	4222	4221
040810-1445	ABGR/XETE, XETE		mid	mtmbu	A	MAS401	forage-low	4220	4221
040810-1450	TSME/XETE, XETE		mid	mtmbu	A	MAS395	forage-low	4221	4221
040810-1535	TSME/XETE, XETE		mid	mtmbu	A	MAS395	denning	4221	4221
040810-1556	TSME/MEFE, XETE		late	mtmbu	A	MAS403	forage-high	4221	4220
040810-1605	TSME/MEFE, XETE		mid	mtmbu	A	MAS395	forage-low	4221	4220
040810-1628	TSME/STAM, MEFE		mid	mtmau	AB	MAS425	forage-high	3101	4220
040810-1815	ABGR/ACGL, ACGL		early-mid	mtdae	B	MAS256	forage-low	4221	4212
040810-1825	PSME/ACGL		early	mtoau	C	MAS263	temp. non-lynx	3203	4222
040810-1839	ABGR/ACGL, ACGL		mid	mtmtu	A	MAS256	forage-high	4221	4221
040810-1125	TSME/XETE		mid	mtmbu	A	MAS406	temp. non-lynx	3202	4220
040810-1152	ABGR/ACGL, ACGL		mid	mtdau	AB	MAS422	forage-low	4222	4225

Structural Condition

A five character string incorporating code for height, canopy cover, and canopy layering (strata) is given as follows:

	Code	Description
Height classes:		
Herbland	he	herbland. Grasses and herbs the only lifeform present.
Shrubland	ls	low shrub. Shrubs are 0 - 1.5 feet tall.
	Ma	medium shrub. Shrubs are 1.6 - 2.5 feet tall.
	Mb	medium tall shrub. Shrubs are 2.6 - 4.0 feet tall.
	ta	tall shrub. Shrubs are 4 - 6.5 feet tall.
	tb	very tall shrub. Shrubs are ≥ 6.5 (and < 16.5) feet tall.
Forest	--	trees, if present, are < 1 inch diameter at breast height (dbh); grasses, herbs, or shrubs may be dominant (refer to previous classes).
	sa	sapling tree. 20 trees per acre 1 - 4.9 inches dbh.[1]
	po	pole tree. 15 trees per acre 5 - 8.9 inches dbh.
	mt	medium tree. 10 trees per acre 9 - 20.9 inches dbh.
	lt	large tree. 10 trees per acre 21 - 31.9 inches dbh.
	vt	giant tree. 5 trees per acre > 31.9 inches dbh.
Cover classes:	na	< 10 percent canopy cover.
	oa	≥ 10 and < 15 percent canopy cover.
	ob	≥ 15 and ≤ 25 percent canopy cover.
	ma	> 25 and ≤ 40 percent canopy cover.
	mb	> 40 and ≤ 66 percent canopy cover.
	da	> 66 percent cover.
Shrub strata	n	no strata.
	e	one stratum with < 30 percent difference in height.
	u	Two or more strata (of the same life form) with > 30 percent difference in height. If shrubland, a second shrub strata must have ≥ 25 percent cover. If herbland or grassland, a second herb or grass strata must have ≥ 10 percent cover (including cryptograms).

Ecological Condition

Code	Description
A	Pristine condition. Evidence of post-industrial human-caused disturbance is absent. Exotic species are absent
B	Little evidence of post-industrial human-caused disturbance is present. Stand composition and structure is predominantly natural. Exotic species are only common (≤ one percent cover).
C	Post-industrial human-caused disturbance is apparent. Stand composition and structure is altered. Exotic species are well represented to abundant (5 – 25 percent cover)
D	Evidence of post-industrial human-caused disturbance is prevalent. Stand composition and structure is altered. Native species are present, but are in peril of loss. Increasers dominate the stand. Invader species are a significant compositional component.
F	Native stand composition, structure, and function are significantly altered Re-establishment of native stand composition, structure, and function will require large energy inputs.

[1] This applies to the largest trees present. A class is determined by the average diameter at breast height (dbh) of the number of trees per acre indicated.

Appendix 3. Vascular plant species observed during the 2000 through 2004 field seasons within Latour Creek, Freezeout, Grandmother Mountain, Marble Mountain, Lost Rocket, St. Joe Divide West, Upper Fishhook, and Pine Creek LAUs. Species are listed alphabetically by life form. Distribution within the study area is indicated by study site. Nomenclature follows Hitchcock and Cronquist (1973).

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Trees												
Abies grandis	grand fir	x	x		x					x	x	x
Abies lasiocarpa	subalpine fir	x	x	x	x	x	x	x		x	x	x
Betula papyrifera	paper birch				x							
Larix occidentalis	western larch		x		x	x			x	x	x	x
Picea engelmannii	Engelmann spruce	x		x	x	x			x	x		x
Pinus albicaulis	whitebark pine						x					
Pinus contorta	lodgepole pine	x	x		x	x	x	x	x	x		x
Pinus monticola	western white pine		x	x	x	x	x		x	x	x	x
Pinus ponderosa	ponderosa pine				x				x			x
Populus tremuloides	quaking aspen				x				x			
Populus trichocarpa	quaking aspen	x										
Pseudotsuga menziesii	Douglas-fir	x	x		x	x		x	x	x	x	x
Rhamnus purshiana	Pursh's buckthorn								x			
Taxus brevifolia	Pacific yew										x	x
Thuja plicata	western red cedar		x		x				x		x	x
Tsuga heterophylla	western hemlock				x	x			x		x	x
Tsuga mertensiana	mountain hemlock	x	x	x	x	x	x	x	x	x	x	x
Shrubs												
Acer glabrum	Rocky Mountain maple	x	x		x	x		x	x	x	x	x
Alnus sinuata	Sitka alder		x		x	x			x		x	x
Amelanchier alnifolia	Saskatoon serviceberry	x	x		x	x		x	x	x	x	x

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Shrubs (continued)												
Berberis repens	creeping barberry				x							x
Cassiope mertensiana	western moss heather			x								
Ceanothus velutinus	snowbrush ceanothus				x			x	x	x	x	
Cornus stolonifera	redosier dogwood											x
Holodiscus discolor	oceanspray	x	x		x	x			x	x	x	x
Juniperus communis	common juniper								x			
Kalmia microphylla	alpine laurel			x								
Ledum glandulosum	western Labrador tea			x								
Lonicera ciliosa	orange honeysuckle				x							
Lonicera involucrata	twinberry honeysuckle			x								
Lonicera utahensis	Utah honeysuckle	x	x	x	x	x	x	x	x	x	x	x
Menziesia ferruginea	rusty menziesia	x	x	x	x	x	x		x	x	x	x
Pachistima myrsinites	boxwood	x	x		x	x			x	x	x	x
Philadelphus lewisii	Lewis' mock orange				x				x			
Phyllodoce empetriformis	pink mountainheath						x	x				
Physocarpus malvaceus	mallow ninebark	x	x		x					x	x	x
Prunus emarginata	bitter cherry	x			x	x		x	x	x		
Ribes hudsonianum	northern black currant			x								
Ribes lacustre	prickly currant			x		x			x			
Ribes montigenum	gooseberry currant			x		x	x					
Ribes viscosissimum	sticky currant					x			x	x		x
Ribes viscosissimum viscosissimum	sticky currant		x									
Rosa gymnocarpa	dwarf rose	x	x		x	x			x	x	x	x
Rubus idaeus	American red raspberry						x					

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Shrubs (continued)												
Rubus parviflorus	thimbleberry	x	x		x	x			x	x	x	x
Salix drummondiana	Drummond's willow			x								
Salix scouleriana	Scouler's willow	x	x		x	x			x	x	x	x
Sambucus cerulea	blue elderberry								x			
Sambucus racemosa	red elderberry	x	x			x	x		x		x	
Sambucus spp.	elderberry	x										
Sorbus scopulina	Greene's mountain ash	x	x		x	x	x	x	x	x	x	x
Sorbus sitchensis	western mountain ash					x		x	x			
Spiraea betulifolia	white spirea	x	x		x	x		x	x	x	x	x
Spiraea densiflora	subalpine spirea					x		x	x			
Symphoricarpos albus	common snowberry	x			x							
Vaccinium globulare	globe huckleberry	x	x	x	x	x		x	x	x	x	x
Vaccinium membranaceum	thinleaf huckleberry	x	x		x	x	x	x	x	x	x	x
Vaccinium myrtillus	whortleberry	x				x		x	x			
Vaccinium scoparium	grouse whortleberry	x		x	x	x	x	x	x	x		x
Herbs												
Achillea millefolium	common yarrow	x		x	x	x		x	x	x	x	
Aconitum columbianum	Columbian monkshood								x			x
Actaea rubra	red baneberry		x						x		x	x
Adenocaulon bicolor	American trailplant	x	x		x				x	x	x	x
Agastache urticifolia	nettleleaf giant hyssop	x										
Agoseris aurantiaca	orange agoseris	x				x	x		x	x		
Agoseris grandiflora	big flower agoseris											x
Agoseris retrorsa	spearleaf agoseris					x		x	x			
Anaphalis margaritacea	western pearly everlasting	x	x	x	x	x	x		x			

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Herbs (continued)												
Anemone oregana	Oregon anemone		x			x			x		x	x
Anemone piperi	Piper's anemone	x	x		x		x		x	x	x	x
Antennaria microphylla	littleleaf pussytoes	x	x	x		x	x	x	x	x		
Antennaria racemosa	raceme pussytoes		x		x				x			x
Antennaria umbrinella	brown pussy-toes						x					
Apocynum androsaemifolium	spreading dogbane				x				x			x
Aquilegia flavescens	yellow columbine								x			
Arenaria capillaris	slender mountain sandwort					x	x	x	x			
Arenaria congesta	ballhead sandwort					x		x	x	x		
Arenaria kingii	King's sandwort	x				x			x	x		
Arenaria macrophylla	bigleaf sandwort	x	x		x	x			x	x	x	x
Arnica cordifolia	heartleaf arnica	x	x	x	x	x	x	x	x	x	x	x
Arnica latifolia	broadleaf arnica								x			
Asarum caudatum	British Columbia wildginger		x			x			x		x	x
Aster foliaceus	leafy aster	x				x	x		x			x
Aster integrifolius	thickstem aster								x			
Aster spp.	aster			x		x		x	x	x		
Besseya rubra	red besseya									x		
Brickellia grandiflora	tasselflower brickellbush							x	x			
Calochortus elegans	elegant mariposa lily					x	x	x	x	x		
Calochortus eurycarpus	white mariposa lily	x										
Caltha leptosepala	white marsh marigold			x								
Campanula rotundifolia	bluebell bellflower	x	x			x		x	x	x		
Castilleja hispida	harsh Indian paintbrush	x										
Castilleja hispida acuta	harsh paintbrush								x			

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Herbs (continued)												
Castilleja miniata	giant red Indian paintbrush		x			x	x					
Castilleja miniata miniata	giant red Indian paintbrush								x			
Castilleja spp.	Indian paintbrush						x					
Centaurea diffusa	white knapweed										x	
Centaurea maculosa	spotted knapweed				x							
Chimaphila menziesii	little prince's pine	x	x		x				x	x	x	x
Chimaphila umbellata	pipsissewa	x	x	x	x	x		x		x	x	x
Chrysanthemum leucanthemum	oxeye daisy		x		x							
Circaea alpina	small enchanter's nightshade		x									x
Cirsium arvense	Canada thistle				x							
Cirsium vulgare	bull thistle											x
Clintonia uniflora	bride's bonnet	x	x	x	x	x			x	x	x	x
Collinsia parviflora	maiden blue eyed Mary									x		
Coptis occidentalis	Idaho goldthread		x	x	x	x			x	x	x	x
Corallorhiza maculata	spotted coral-root		x		x							
Corallorhiza mertensiana	Mertens' coral-root	x	x			x						x
Dicentra formosa	bleeding heart								x			
Disporum hookeri	drops of gold	x	x			x			x		x	x
Dodecatheon pauciflorum	darkthroat shootingstar						x					
Dodecatheon spp.	shootingstar			x								
Epilobium angustifolium	fireweed	x	x	x	x	x	x	x	x	x	x	
Epilobium glaberrimum	glaucus willowherb								x			
Epilobium spp.	willowherb							x				
Eriogonum flavum	alpine golden buckwheat						x		x	x		
Eriogonum heracleoides	parsnipflower buckwheat								x			

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Herbs (continued)												
Eriogonum umbellatum	sulphur-flower buckwheat	x				x				x		
Eriogonum umbellatum subalpinum	sulfur flower					x	x	x	x			
Erythronium grandiflorum	yellow avalanche-lily	x			x	x		x	x	x		
Fragaria vesca	woodland strawberry	x			x						x	
Frasera spp.	green gentian	x							x			
Galium triflorum	fragrant bedstraw	x	x	x	x	x			x		x	x
Gaultheria ovatifolia	Western teaberry			x								
Gayophytum spp.	groundsmoke									x		
Gentiana calycosa	Rainier pleated gentian			x								
Gentiana calycosa calycosa	Rainier pleated gentian								x			
Geum macrophyllum	largeleaf avens		x									
Geum triflorum	old man's whiskers					x						
Gilia aggregata	scarlet gilia	x				x						
Goodyera oblongifolia	western rattlesnake plantain	x	x		x	x	x		x	x	x	x
Habenaria saccata	slender bog orchid								x			
Habenaria unalascensis	slender-spire orchid								x			
Hedysarum occidentale	western sweetvetch					x						x
Helianthella uniflora	oneflower helianthella				x	x			x			x
Heracleum lanatum	common cowparsnip											x
Heuchera cylindrica	roundleaf alumroot					x						x
Heuchera cylindrica glabella	roundleaf alumroot								x			
Hieracium albertinum	western hawkweed	x				x	x					
Hieracium albiflorum	white hawkweed	x	x	x	x	x	x	x	x		x	x
Hieracium cynoglossoides	houndstongue hawkweed	x				x		x	x	x		

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Herbs (continued)												
Hieracium gracile	slender hawkweed	x				x	x	x	x			
Hieracium pratense	meadow hawkweed		x									
Hypericum formosum	western St. John's-wort	x										
Hypericum formosum scouleri	western St. John's-wort					x		x	x			
Hypericum perforatum	common St. Johnswort	x	x		x							
Hypericum spp.	St. Johnswort			x								
Hypopitys monotropa	pinesap				x				x	x	x	
Ligusticum canbyi	Canby's licorice-root					x	x		x			
Ligusticum spp.	licorice-root			x								
Linnaea borealis	twinflower			x	x		x				x	x
Listera convallarioides	broadlipped twayblade	x	x				x					
Listeria caurina	northwestern twayblade						x					
Lomatium dissectum	fernleaf biscuitroot								x	x		
Lomatium spp.	biscuitroot					x		x				
Lomatium triternatum	nineleaf biscuitroot	x							x	x		
Lupinus argenteus argenteus	silvery lupine								x			
Lupinus polyphyllus	bigleaf lupine	x				x				x		
Lupinus polyphyllus burkei	lupine				x				x			
Lupinus spp.	lupine			x	x	x		x	x			
Microseris nutans	nodding microceris					x		x	x			
Microseris troximoides	weevil prairie-dandelion					x						
Mimulus lewisii	purple monkeyflower						x					
Mimulus moschatus	muskflower											x
Mitella breweri	Brewer’s miterwort						x					
Mitella pentandra	fivestamen miterwort				x	x			x		x	

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Herbs (continued)												
Mitella spp.	miterwort						x		x			
Mitella stauropetala	smallflower miterwort		x						x			
Monotropa uniflora	indianpipe								x			
Montia cordifolia	heartleaf springbeauty					x			x			x
Oplopanax horridum	Devil's club											x
Osmorhiza chilensis	sweetcicely	x	x		x	x	x		x	x	x	x
Osmorhiza purpurea	purple sweetroot					x		x				
Pedicularis bracteosa	bracted lousewort	x	x	x	x	x	x		x	x		x
Pedicularis contorta	coiled lousewort	x	x			x	x		x	x		x
Pedicularis groenlandica	elephanthead lousewort			x					x			
Pedicularis racemosa	sickletop lousewort	x	x	x		x	x		x			
Penstemon attenuatus	sulphur penstemon	x		x		x		x		x		x
Penstemon attenuatus attenuatus	taper-leaved penstemon		x						x			
Penstemon fruticosus	bush penstemon	x				x	x	x	x			
Penstemon humilis	low beardtongue						x					
Penstemon lyallii	Lyall's beardtongue	x				x		x	x	x		
Phacelia hastata	silverleaf phacelia				x							
Phlox diffusa	spreading phlox					x	x	x				
Plantago major	common plantain				x							
Pleuricospora fimbriolata	fringed pinesap					x						
Polemonium occidentale	western polemonium	x				x		x	x			
Polemonium pulcherrimum	Jacob's-ladder			x		x	x			x		
Polygonum bistortoides	American bistort					x						
Polygonum phytolaccaefolium	fleeceflower	x				x		x	x	x		x

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Herbs (continued)												
Prunella vulgaris	common selfheal		x		x							
Pterospora andromedea	woodland pinedrops	x			x				x	x		
Pyrola asarifolia	liverleaf wintergreen	x	x		x	x			x	x	x	x
Pyrola picta	whiteveined wintergreen										x	
Pyrola secunda	sidebells pyrola	x	x	x	x	x	x	x	x	x	x	x
Rudbeckia spp.	coneflower											x
Rumex occidentalis	western dock		x									
Sanguisorba sitchensis	Canadian burnet			x			x					
Saxifraga adscendens	wedgeleaf saxifrage								x			
Saxifraga cernua	nodding saxifrage								x			
Saxifraga ferruginea	russethair saxifrage								x			
Saxifraga spp.	saxifrage			x								
Sedum lanceolatum	spearleaf stonecrop					x			x			
Senecio integerrimus	lambstongue ragwort				x		x		x	x		
Senecio megacephalus	rocky ragwort					x						
Senecio serra	tall ragwort			x	x							
Senecio spp.	ragwort			x				x	x			x
Senecio triangularis	arrowleaf ragwort	x	x	x		x	x		x		x	x
Silene douglasii	seabluff catchfly					x	x					
Silene menziesii	Menzies' campion				x							
Silene parryi	Parry's silene	x				x		x	x			
Silene scouleri	simple campion								x			
Smilacina racemosa	false Solomon's seal	x	x		x	x			x	x	x	x
Smilacina stellata	false Solomon's seal	x	x	x	x	x			x	x	x	x
Spiranthes romanzoffiana	hooded ladies'-tresses			x								

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Herbs (continued)												
Stellaria media	common chickweed					x						
Stellaria nitens	shiny chickweed								x			
Stenanthium occidentale	western featherbells								x			
Streptopus amplexifolius	claspleaf twistedstalk					x			x			x
Synthyris missurica	tailed kittentails					x			x			
Thalictrum fendleri	Fendler's meadow-rue	x							x	x	x	x
Thalictrum occidentale	western meadow-rue		x	x	x	x	x		x			x
Tiarella trifoliata	threeleaf foamflower	x	x	x		x					x	x
Tiarella trifoliata unifoliata	foamflower		x									
Tofieldia glutinosa	sticky tofieldia			x								
Trautvetteria caroliniensis	Carolina bugbane			x			x		x			x
Trifolium longipes	longstalk clover		x		x							
Trifolium repens	white clover		x		x							
Trillium ovatum	Pacific trillium	x	x			x			x	x	x	x
Valeriana sitchensis	Sitka valerian	x	x		x	x	x		x			x
Veratrum spp.	false hellebore											x
Veratrum viride	green false hellebore	x		x	x	x	x	x	x		x	
Veronica americana	American speedwell		x									
Veronica cusickii	Cusick's speedwell							x	x			
Viola glabella	pioneer violet		x			x			x			x
Viola orbiculata	darkwoods violet	x		x	x	x	x	x	x	x	x	x
Viola spp.	violet		x			x						x
Xerophyllum tenax	common beargrass	x	x	x	x	x	x	x	x	x	x	x
Grasses, Sedges, and Rushes												
Agropyron spicatum	bluebunch wheatgrass				x				x			

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Grasses, Sedges, and Rushes	(continued)											
Agropyron spp.	wheatgrass							x		x		
Agropyron trachycaulum	slender wheatgrass					x						
Bromus spp.	brome					x					x	x
Bromus vulgaris	Columbia brome				x		x					
Bromus vulgaris vulgaris	Columbia brome		x									
Calamagrostis canadensis	bluejoint			x			x		x			
Calamagrostis purpurascens	purple reedgrass	x			x		x		x			
Calamagrostis rubescens	pinegrass	x	x		x	x			x	x		x
Calamagrostis tweedyi	Tweedy's reedgrass				x				x			
Carex aquatilis	water sedge								x			
Carex arcta	northern cluster sedge		x									
Carex concinnoides	northwestern sedge		x		x				x			x
Carex geyeri	Geyer's sedge	x		x	x	x	x	x	x	x	x	
Carex hoodii	Hood's sedge						x					
Carex laeviculmis	smoothstem sedge		x									
Carex mertensii	Mertens' sedge								x			
Carex nigricans	black alpine sedge	x					x	x	x			
Carex paysonis	Payson's sedge						x					
Carex rossii	Ross' sedge	x	x	x	x	x	x	x	x	x		x
Carex spp.	sedge							x				
Dactylis glomerata	orchardgrass				x							
Danthonia intermedia	timber oatgrass					x			x	x		
Elymus glaucus	blue wildrye	x		x	x		x		x	x		x
Festuca idahoensis	Idaho fescue					x	x					
Festuca idahoensis idahoensis	Idaho fescue								x			

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Grasses, Sedges, and Rushes	(continued)											
Festuca occidentalis	western fescue		x						x	x		
Festuca viridula	greenleaf fescue	x			x	x	x	x	x	x		
Juncus ensifolius	swordleaf rush				x		x					
Juncus parryi	Parry's rush	x				x		x	x			
Luzula hitchcockii	Hitchcock's smooth woodrush	x		x		x	x	x	x	x		x
Luzula spicata	spiked woodrush								x			
Phleum pratense	timothy				x						x	
Poa annua	annual bluegrass								x			
Poa secunda	Sandberg bluegrass								x			
Trisetum spicatum	spike trisetum						x		x			
Ferns												
Athyrium filix-femina	common ladyfern		x						x		x	x
Cheilanthes feei	slender lipfern								x			
Cheilanthes gracillima	lace lipfern							x	x			
Cryptogramma crispa	rock-brake	x				x			x			
Dryopteris austriaca	mountain wood fern											x
Dryopteris filix-mas	male fern		x			x						
Equisetum arvense	field horsetail			x					x			
Gymnocarpium dryopteris	western oakfern			x		x			x		x	x
Polystichum lonchitis	northern hollyfern	x	x			x			x		x	x
Polystichum munitum	western swordfern		x						x		x	x
Polystichum munitum munitum	western swordfern				x	x						
Pteridium aquilinum	western brackenfern	x	x		x	x			x	x	x	x
Thelypteris limbosperma	woodfern								x			

Appendix 4**.** Moss, lichen and liverwort species observed during the 2004 field season within Latour Creek, Freezeout, Grandmother Mountain, Lost Rocket, St. Joe Divide West, and Pine Creek LAUs. Species are listed alphabetically. Distribution within the study area is indicated by study site. Nomenclature for lichens follows Essingler and Egan 1995. Nomenclature follows Stotler and Crandall-Stotler 1977 for liverworts. Nomenclature for mosses follows Anderson et al. 1990.

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Lichens												
Alectoria sp.							x					
Alectoria sarmentosa							x					
Bryoria sp.									x			
Cetraria platyphylla									x			
Cladonia sp.							x					x
Hypogymnia imshaugii									x			
Letharia vulpina									x			
Melanelia sp.												x
Nodobryoria sp.									x			
Parmeliopsis sp.							x		x			
Peltigera sp.									x			x
Liverworts												
Porella sp.												x
Scapania sp.							x					
Mosses												
Atrichum selwynii	moss								x			x
Dicranum sp.	moss						x					x
Dicranum tauricum	moss								x			
Homalothecium sp.	moss											x
Hypnum sp.	moss						x					
Lycopodium spp.	clubmoss			x			x					

Species	Common Name	Ahrs Canyon	Butler Creek	Fortynine Meadows	Highland-Douglas Creeks	Latour Peak	Lookout Mountain	Point 6168	Rochat Peak	Street-Rochat Creeks	Upper Hunter Creek	Upper Pine Creek
Mosses (continued)												
Mnium sp.	moss						x					x
Polytrichum juniperimun	moss						x					x
Rhizomnium sp.	moss											x
Rhytidiopsis robusta	moss						x		x			x
Selaginella wallacei	Wallace's spikemoss								x	x		x
Sphagnum spp.	sphagnum								x			