CHAPTER V. WOODLAND CARIBOU

TABLE OF CONTENTS

List of Tables

List of Figures

A. CONTEXT OF THE PROPOSED ACTION FOR CARIBOU

The proposed action is described in detail in Chapter I of this biological opinion.

This section identifies the action area and provides an overview of existing management of caribou and caribou habitat on National Forest Service lands in the action area. Next this section describes the guidelines and standards that provide for caribou conservation when actions are carried out under the Proposed Action (i.e., the Revised Plan). Section B. of this biological opinion describes the status of the Selkirk Mountains population of woodland caribou (woodland caribou) (*Rangifer tarandus caribou*). Section D. describes the baseline condition of the woodland caribou population and its habitat in the action area. Section E. provides an analysis of the effects of the proposed action on the Selkirk Caribou, including analysis of effects on designated critical habitat. This is followed by our conclusion, incidental take statement, reiniation notice, and literature considered in the biological opinion. This opinion will consider the effects of implementation of the proposed framework of the Revised Plan as well as the effects of proposed measures to be implemented at the project level. However, this biological opinion does not provide a detailed analysis for effects of specific projects. Future projects undertaken by the USFS will undergo detailed, site-specific analysis for effects on listed species.

1. Action Area

The "action area" includes all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action [50 CFR §402.02]. The action area does not necessarily include all areas potentially frequented by far-ranging, or migrant, species (USFWS and NMFS 1998, pp. 4-15 to 4-19).

The Selkirk caribou recovery area (recovery area) is comprised of approximately 946,400 acres and includes portions of the Colville National Forest in Washington, the northern portion of the IPNF, the Idaho Department of Lands (IDL), and a portion in British Columbia. (B.C.), Canada. Fifty-three percent of the recovery area is located in B.C., while the remaining 47 percent is located within the United States (U.S.). Twenty-nine percent of the caribou habitat in the recovery area is on the IPNF and 61 percent of the caribou habitat on the U.S. portion of the recovery area is on the IPNF (USFS 2013a, p. 109).

The recovery area is divided into caribou management units (CMUs). Each CMU approximates the average home range size of Selkirk caribou in the Selkirk Mountains (about 30 square miles or 19,200 acres) (USFS 1985). These CMUs assist with analyzing and tracking cumulative effects (ibid). The CMUs are not meant to depict the actual location of Selkirk caribou home ranges on the landscape. The U.S. portion of the recovery area is comprised of 17 CMUs, including 12 on the IPNF (Figure V-1).

2. Relationship of Proposed Action to Existing Management.

The majority of Selkirk caribou habitat in the U.S. portion of the recovery area is managed by the Forest Service under the guidance of Forest-wide standards and habitat management

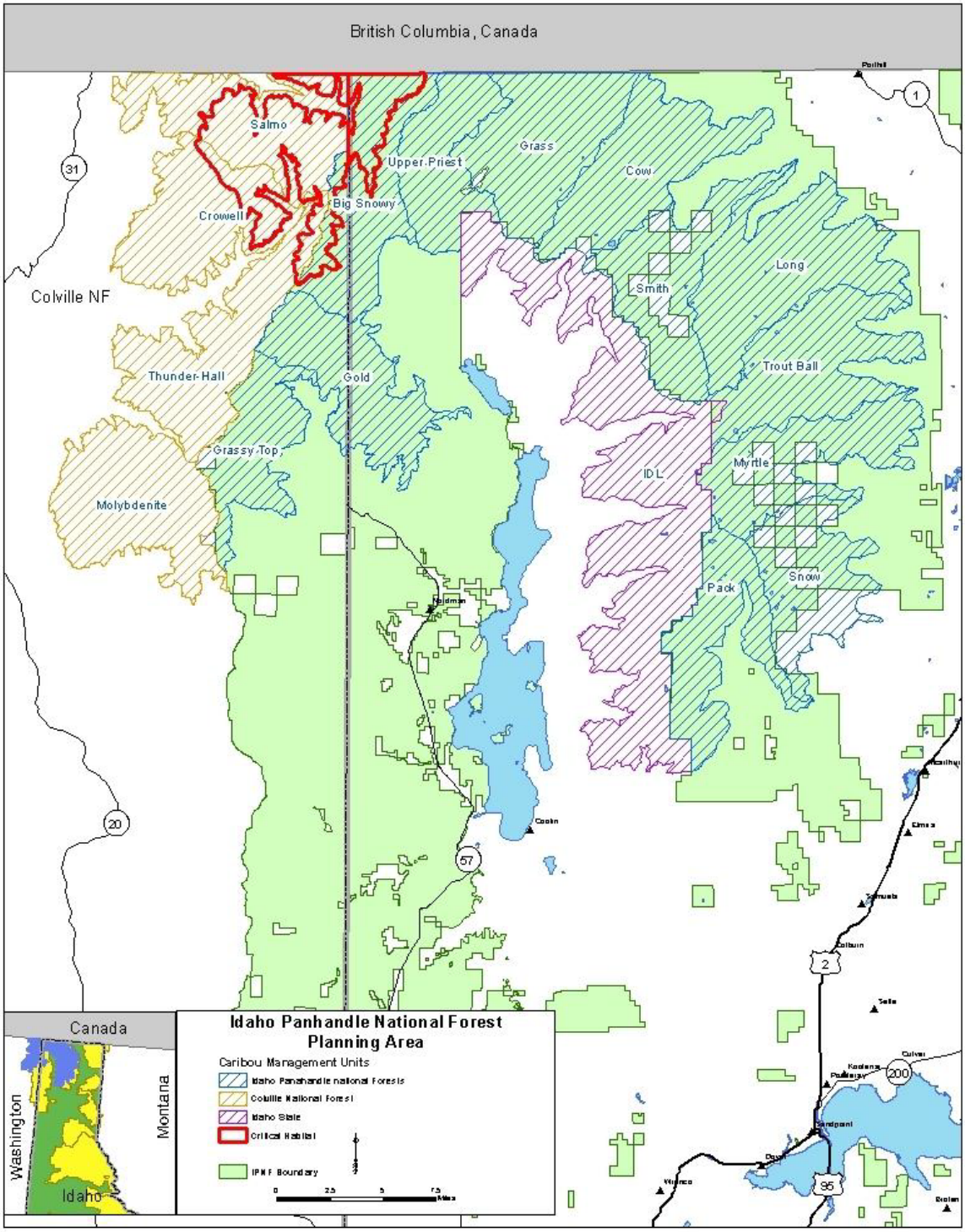

Figure V-1. Location of caribou management units (CMUs) and critical habitat on the IPNF and Colville National Forests.

guidelines. Specifically, with respect to the IPNF, current management of Selkirk caribou habitat is prescribed by the 1987 Forest Plan (existing plan) MA direction and Appendix N: Caribou Habitat Management Guidelines. The desired future condition for caribou under the existing plan includes the following:

> Caribou habitat will be maintained and improved. Caribou habitat will be provided by maintaining a balance of seasonal habitats. These seasonal requirements may require vegetative manipulation to maintain the required balance. Habitat for caribou will be managed to support the IPNF share of recovered populations, as per the 1994 Recovery Plan (USFWS 1994) for the species.

On the IPNF, relevant Forest-wide standards for Selkirk caribou in the existing plan include:

- Management of habitat and security needs for threatened and endangered species will be given priority in identified habitat.
- Actively initiate and participate in an information/education program to promote a better understanding of endangered species conservation and recovery both within and outside the Forest Service.
- Consider cumulative effects when evaluating activities within identified habitat.

Under the existing plan, caribou management area (MA-7) specific standards include:

- Manage for roaded-natural and where possible toward semi-primitive motorized and non-motorized recreation. Restrict motorized use when needed to protect caribou.
- Seasonal closures of some or all uses may be needed to protect caribou.
- Retain and manage established caribou travel corridors that occur in mature timber.
- Collector and local roads generally closed to vehicles with physical barriers preferred. Arterial roads may be closed as needed to meet threshold level for each CMU. Additional seasonal closures as needed to protect caribou.
- Contain and control fires within the management area to prevent loss of coniferous species in all size classes.
- Road construction through old-growth cedar/hemlock stands should be limited to those instances in which no other reasonable access to stands to be harvested is available. Snow roads are encouraged where possible.
- Provide seasonal habitat requirements in accordance with the Caribou Management Guidelines (Appendix N, USFS 1987). These guidelines are used for preparation of silvicultural prescriptions necessary to provide seasonal habitat within identified caribou habitat.

In 2008, the Idaho Roadless Rule (IRR) (36 CFR 294 Subpart C) was finalized and designated 797,100 acres of the IPNF as Inventoried Roadless Areas. The 2008 IRR effectively modified where timber production, road construction, and mineral activities could occur in some of the original 1987 Forest Plan MA allocations. The IRR specifically added restrictions on and allowances for activities in several of the MAs in the existing plan overlapping inventoried roadless areas (IRAs). Similarly, as described in Appendix E to the Draft Revised Plan, where the IRAs overlap the Revised Plan MA designations, the provisions of the IRR prevail. Briefly,

these restrictions include additional prohibitions on road construction, timber harvest, and mineral leasing in existing plan MA1b,c,e; additional limited allowances for roads in MA5; additional allowances for roads and timber harvest both within and outside community protection areas in MA5; conditions on road construction and timber harvest associated with mineral leasing and the applicable land management plan in MA6; and direct that MA2a,b, 3, and 4a should be managed in accordance with the applicable land management plan. The standards and guidelines in the NRLMD (USFS 2007, entire) and the standards for the recovery zone bear management units (BMUs) in the Grizzly Bear Access Amendment (USFS 2011c, entire) provide additional direction and limits in regards to vegetation treatments for lynx and wheeled motorized access for grizzly bears, respectively, that affect (benefit) caribou habitat. Within the IPNF, approximately, 58 and 96 percent of the Selkirk caribou recovery area overlaps with the IPNF lynx analysis units (LAUs) where the NRLMD is applied and BMUs where the Access Amendment is applied, respectively (USFS 2013a, p.118).

3. Proposed Action Description

As described in Chapter I, the Revised Plan direction is organized by goals, desired conditions, objectives, guidelines, and standards. The Revised Plan forest-wide direction describes the framework under which lands will be managed for the next 10 to 15 years on the Forest.

The Revised Plan desired conditions for wildlife and vegetation, and guidelines and standards related to wildlife, are discussed in Chapter I of this biological opinion and contained in Appendix A of Chapter I. Guidelines and standards are the procedures and requirements (respectively) applied to project and activity decision-making to achieve goals, desired conditions, and objectives. All project-level activities must meet the guidelines and standards. Table V-1 describes the guidelines and standards to be applied at the project level specifically for the conservation of caribou and caribou habitat under the Revised Plan.

Table V-1. Guidelines and standards in the IPNF Revised Plan for caribou conservation.

Management Need	Element Code	Element Description
Linkage	FW-GDL-WL-15	Sets direction for interagency coordination and inclusion on wildlife crossing features in roadway construction and reconstruction.
Linkage	FW-GDL-WL-16	Limits management activities within one-quarter mile of existing crossing features, and future crossing features.
Linkage	FW-GDL-WL-17	Maintains federal ownership in wildlife linkages identified through interagency coordination.
General Habitat	FW-STD-VEG-01	Restricts timber harvest or other vegetation management activities in old-growth that would likely modify the characteristics of the stand to the extent that the stand would no longer meet the minimum old-growth criteria.

General Habitat	FW-GDL-VEG-01	Limits timber harvest in old-growth to actions that improve resistance and/or resiliency.
General Habitat	FW-GDL-VEG-02	Limits road construction (permanent or temporary) or other developments in old-growth stands unless access is needed for certain reasons to increase the resistance and/or resilience of the stands to disturbances.
General Habitat	FW-GDL-WL-02	States management activities in seasonal caribou habitat should trend vegetation toward target stand condition (Exceptions may occur when using fire to emulate natural disturbance patterns to benefit other listed species or for the long term maintenance of caribou habitat).
Calving Habitat	FW-GDL-WL-03	Avoids or minimizes disturbance from management activities in known occupied caribou calving habitat from June 1 to July 15.
Disturbance/Winter Habitat	FW-GDL-WL-04	Avoids or minimizes disturbance from over-snow vehicle use during the winter period of December 1 to April 30 in areas known to be occupied by caribou.

The standards and guidelines discussed in Chapter I Appendix A and Table V -1 would be applied forest-wide as well as across the management areas (MAs) and geographic areas (GAs). Each of the twelve management area designation has its own prescription for management and allowed uses (see Table I-5 in Chapter I of this biological opinion). The distribution of caribou habitat in the recovery area across the MA designations under the Revised Plan is provided in Table V -2.

Table V-2. Distribution of caribou habitat (acres[1]) in the IPNF recovery area across the designated management areas (MAs) under the Revised Plan (USFS 2013a, p. 130).

Proposed Action Management Areas	Woodland Caribou Habitat			Non-Habitat	Total Acres of Habitat (Percent of Total)	Critical Habitat
	Subalpine Fir	Cedar-Hemlock	Non-Forest[2]	Other[3]		
1a – Wilderness	2,594	4,297	339	278	**7,508 (3)**	2,578
1b – Recommended Wilderness	22,327	17,143	4,536	3,262	**47,268 (19)**	5,078
1c – Wilderness Study Area	0	0	0	0	**0**	0
1e – Primitive Lands	8,241	4,218	4,951	504	**17,914 (7)**	0
2a – Wild & Scenic Rivers	0	0	0	0	**0**	0
2b – Eligible Wild & Scenic Rivers	26	719	4	821	**1,570 (<1)**	0
3 – Special Areas	0	3	0	0	**3 (<1)**	0
4a – Research Natural Areas	453	643	152	0	**1,248 (1)**	845
4b – Experimental Forests	0	0	0	0	**0**	0

5 – Backcountry	40,680	23,633	8,225	5,804	**78,342 (32)**	0
6 – General Forest	27,784	52,337	3,399	9,957	**93,477 (38)**	0
7 – Primary Recreation Areas	0	0	0	0	**0**	0
Total:	**102,105**	**102,993**	**21,612**	**20,626**	**247,336**	**8,501**

1. Where special designation MA's overlap, acre calculation based on primary MA following the hierarchy listed in the Revised Plan.
2. Non-forest includes rock, scree, meadows and small lakes
3. Other includes dry-site habitat types that do not provide the kind of climax habitats caribou prefer.

Geographic Areas have desired conditions that are specific to a locale, such as a river basin or valley. The GA desired conditions were developed to refine forest-wide management to better respond to local conditions and situations that may occur within a specific GA. The desired conditions in GAs for listed species would not exert additional effects on the species, rather the desired condition would help the Forest achieve a forest-wide desired condition, objective, standard, or guideline for the species. Refer to Chapter II.A.2 for an explanation of the relationship of GAs to listed species.

B. STATUS OF THE SPECIES

1. ESA Listing Status

In 1980, the Service received two petitions to list the Selkirk Mountains population of caribou as endangered under the Act: one from the Idaho Fish and Game (IDFG 1980) and one from Dean Carrier (Carrier 1980), a USFS staff biologist and former chairman of the International Mountain Caribou Technical Committee (IMCTC). At that time, the population was thought to consist of only 13-20 animals (48 FR 1722-1726).

In response to the two listing petitions and other available information, the Service emergency listed the Selkirk Mountains caribou population in northeast Washington, northern Idaho, and southeast B.C. on January 14, 1983 (48 FR 1722-1726), and on June 22, 1983 (48 FR 28500-28504), published a proposed rule to list the population as endangered. The first emergency rule expired on September 12, 1983. A second emergency rule was published on October 25, 1983 (48 FR 49245-49249), to extend emergency protection for the Selkirk Mountains caribou population until a final rule could be published. Final listing of the Selkirk Mountains caribou population as endangered in Idaho, Washington, and southeast B.C. occurred on February 29, 1984 (49 FR 7390-7394). Mountain caribou within B.C. are provincially "redlisted" (considered to be threatened or endangered) and listed as threatened under Canada's Species at Risk Act since 2000 (MCTAC 2002).

A cooperative management plan/recovery plan was completed in 1985 and revised in 1994. The recovery area includes portions of the Colville National Forest in Washington, the northern portion of the IPNF and a portion in B.C., Canada. A five year status review was completed in 2008; and an update and revision of the 1994 Recovery Plan is pending.

2. Species Description, Life History, Population Dynamics

Woodland caribou are medium-sized members of the deer family, with adult males approaching 600 pounds and adult females around 300 pounds. Woodland caribou are distinguished from other members of the deer family by their large hooves, broad muzzles, and distinctive antlers developed annually by both sexes. The pelage of the Selkirk caribou ranges from a deep chocolate brown in midsummer to a grayish-tan during spring. Adult males develop a distinctive white mane during the rut (USFWS 1994).

Woodland caribou (inclusive of the Selkirk Mountains population) have a low reproduction rate; females usually give birth to their first calf at three years of age, and single calves, rather than twins, are the norm. A cow will average six calves over her lifetime. Calf mortality is high for the first few months of life and can be as much as 50 percent or higher. This low reproductive rate is a major limiting factor to stabilizing or increasing woodland caribou populations (Paquet 1997). Calving season occurs from June 1 to July 7. Areas selected for calving are typically at high-elevation, mature and old-growth forest ridgetops that can be food limited, but are more likely to be predator free (Kinley and Apps 2007).

All caribou and reindeer in the world are a single species (*Rangifer tarandus*) and are presumed able to interbreed and produce viable, fertile offspring (Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2002). Woodland caribou are classified as *Rangifer tarandus,* subspecies *caribou.* A variety of terms have been used to refer to different caribou groupings below the subspecies level (e.g., ecotypes, subpopulations, local populations, herds, etc.). Definition of such terms is essential in distinguishing between different caribou groups, but the definition of some of these terms has been arbitrary and variable among authors (COSEWIC 2002, Zittlau 2004). However, the concept of ecotypes has gained acceptance. Ecotypes are described as classes of populations adapted to different landscapes or environments as expressed by their movements and feeding behavior (COSEWIC 2002). There are three recognized ecotypes of woodland caribou: mountain, northern, and boreal; each ecotype is differentiated by the type of habitat occupied, their movement patterns, and feeding behavior.

The mountain ecotype of woodland caribou, to which the Selkirk Mountains subpopulation belongs, occurs in high elevation (generally above 4,000 feet elevation), steep terrain of the mountainous southeastern and east-central portions of B.C., and the Selkirk Mountains of northern Idaho and northeastern Washington. This caribou ecotype primarily occupies mature to old-growth cedar/hemlock and spruce/fir forests that typically have high snow levels, and feeds almost exclusively on arboreal lichen during the winter. In contrast to the seasonal, long-distance migrations undertaken by some caribou subspecies (e.g., barren ground caribou), woodland caribou make seasonal elevational movements in response to factors such as snow level, food availability, and predator avoidance.

In the remainder of this document, the term “Selkirk caribou” will be used in reference to the population of woodland caribou that is the subject of this biological opinion. The term “woodland caribou” will be used to describe characteristics or habits of all woodland caribou, regardless of subpopulation or as presented from published literature.

3. Habitat Requirements

Mountain ecotypes of woodland caribou are closely associated with late-successional coniferous forests of the Interior Wet-belt ecosystem of B.C. and the United States (Apps et al. 2001, Cichowski et al 2004). According to Stevenson et al. (2001, p. 12), who reviewed approximately 15,000 radio-telemetry findings collected from 300 radio-collared mountain caribou across 13 subpopulations, caribou prefer old forests to younger stands across their entire range and during all seasons. Mountain caribou survival depends on their ability to spread out across large areas of suitable habitat where it is difficult for predators to find them (FR 77 71069). Generally, suitable habitat for mountain caribou can be described as habitat essential to meet all their life requisite needs (e.g., water, shelter, forage, breeding, calving, and dispersal) (Paquet 1997, p. 13). Suitable winter habitat is defined as mature to old-growth forests (FR 77 71069; Paquet 1997, p. 15) that support abundant arboreal lichens, the key winter food source of mountain caribou (Stevenson et al. 2001, p.1; Paquet 1997, pp. 2, 13; Scott and Servheen 1985, p. 92; Servheen and Lyon 1989, p. 235). Relative to defining suitable mountain caribou winter habitat, various terminologies has been used to describe mature, old-growth, and more recently, late-successional forests supporting abundant arboreal lichen growth, and these terms have often been used interchangeably. Regardless of what terminology is used to describe suitable mountain caribou winter habitat (i.e., late-successional forests, mature forests, old-growth forests), the common attributes are microsite conditions (light, temperature, humidity, substrate, and vertical height above the snow) that support abundant arboreal lichen growth (Detrick 1994) and forest structure (tree density, size, age, canopy closure, etc.). Paquet (1997, p. iv) cited these characteristics as occurring in forests greater than 125 years of age, while other researchers cited these attributes as generally occurring in forests greater than 140 years of age (App et al. 2001, p. 70; Stevenson et al 2001, p. 1; McLellan et al. 2011, p. 853). The protection of and management for late-successional/mature/old-growth forests providing an abundance of arboreal lichens are essential to maintaining a caribou population.

During winter, mountain caribou subsist almost entirely on arboreal lichens (Paquet 1997, pp. 2, 13; Scott and Servheen 1985, p. 92; Servheen and Lyon 1989, p. 235; Stevenson et al. 2001, p.1). Two species of arboreal lichens (*Bryoria* spp. and *Alectoria sarmentosa*) comprise a critical winter food source, as the caribou diet is almost entirely lichen at this time of the year (Paquet 1997, p. 13; Stevenson et al. 2001, p. 1). These lichens are extremely slow-growing, typically reaching their growth potential (abundance) in mature/old-growth forests 150 years or older (Paquet 1997, p. 15). They require stable, mature subalpine environments and rarely flourish in second-growth forests, although under the right conditions, maturing seral stands can provide abundant lichen growth (USFWS 2001). Factors such as relative humidity, wetting and drying cycles and amount of light are ultimately the controlling factors. Subalpine fir trees and snags tend to support higher densities of these lichens than other tree species because most other conifer species in this region tend to lose their branches as they age, which provides less substrate for arboreal lichens (Detrick 1984).

Research on the Selkirk caribou has documented their preference for mature and old growth subalpine fir/Engelmann spruce forests and, western red cedar/western hemlock forests generally above 4,500 feet elevation (USFWS 2008a, p. 20), and the ecotone between these two communities (subalpine fir and western red cedar/western hemlock), have been identified as

important early winter habitat, October through early January (Freddy 1974, Scott and Servheen 1985, Rominger and Oldemeyer 1989, Servheen and Lyon 1989, Allen1998b, Kinley and Apps 2007). In general, seasonal habitats of Selkirk caribou consist of early winter, late winter, spring, calving, and summer (Kinley and Apps 2007, p. 7). Early winter and late winter habitats are considered to be the most important habitats to caribou and are the most limiting on the landscape within the recovery area (USFS 2004) (see description of Selkirk caribou recovery area in the *Status and Distribution* section below). Seasonal habitats are characterized as follows (Kinley and Apps 2007) and updated based on Wakkinen and Slone (2010, p.9) as indicated:

Early Winter: Early winter is a period of rapid snow accumulation and generally encompasses from October 17 to January 19 (Kinley and Apps, p. 7). Kinley and Apps (2007, p. 15) reported that during this time caribou are often associated with landscapes dominated by spruce and subalpine fir stands with a forest canopy closure of at least 26-50 percent and strongly preferred old forest habitats. At a finer scale, Scott and Servheen (1984, p.30) found that during winter caribou selected stand conditions that minimized snow depth with dense canopies of 76-100 percent in old-growth western hemlock/ cedar forests with large, lichen bearing branches. Caribou seek out these more closed canopy timber stands where they feed on a combination of lichen on windthrown trees, and lichens that have fallen from standing trees (litterfall) (MCTAC 2002, p. 10). If available, shrubs and other forbs that remain accessible in snow wells under large trees are also consumed. A conifer canopy that intercepts snow and allows access to feeding sites is important (MCTAC 2002, p. 10) until the snowpack consolidates and the caribou can move to higher elevations (USFS 2004, p. 18). However, these elevational shifts can be quite variable within and between years, depending on snow levels (Apps *et al.* 2001, p. 67; Kinley *et al.* 2007; p. 94). All mountain caribou experience. Recently, Wakkinen and Slone (2010, p.9), identified the poorest mobility and food availability of any season during early winter because of the typically deep, soft snow (MCTAC 2002, p. 10).

Late Winter: Late winter generally starts around January 19 and extends to about April 19 (Kinley and Apps, 2007, p.7). During this time, the snowpack is deep - up to 16 feet (or 5 meters) on ridge tops - and firm enough to support the animal's weight, which allows easier movement. These upper slopes and ridge tops are generally higher in elevation, support mature to old stands of subalpine fir and Engelmann spruce with preferred canopies similar to early winter at generally 26 to 50 percent cover (Kinley and Apps, 2007, p. 15), and have high levels of arboreal lichen (USFWS 1994, p. 6; MCTAC 2002, p. 10; USFWS 2008a, p. 20).. Late winter encompasses January 19 through April 19 in the Selkirk ecosystem (Wakkinen and Slone 2010, p.9).

Spring: In spring (April 20 – July 7), Selkirk caribou move to areas with green vegetation (Servheen and Lyon 1989, p. 235; USFWS 1994, p.7), which become the primary food source. These areas often overlap with early and late winter ranges at elevations where new, green vegetation is appearing (Servheen and Lyon 1989, p. 235; MCTAC 2002, p. 11), which allows the animals to recover from the effects of winter (USFWS 1994, p. 7).

Calving: Pregnant females will move to spring habitats for forage, but during the calving season from June 1 to July 7, the need to avoid predators influences habitat selection. Areas selected for calving are typically high elevation alpine ridgetops and non-forested areas in close proximity to old-growth forests, as well as high-elevation basins that can be food limited, but which may have much lower densities of predators (USFWS 1994, p. 8; MCTAC 2002, p. 11; Cichowski *et al.* 2004, p. 232, Kinley and Apps 2007, p. 16). Arboreal lichen becomes the primary food source for pregnant females and females with calves, since green forage is unavailable in these secluded and high-elevation habitats. Within in several weeks of birthing, cows with their calves, begin moving to meadows to forage on more succulent greener vegetation while remaining in close proximity to escape cover on nearby ridges and benches.

Summer: July 8 to around October 16 is considered to be the summer habitat season for caribou. During this time, Kinley and Apps (2007, p. 15) report that Selkirk caribou are associated with spruce and subalpine fir that also provides thermal cover, although summer habitat is in higher elevations with a preference for valleys (Kinley and Apps 2007, p. 15), and habitat with high forage availability (USFWS 1994, p. 8). In the Selkirk Mountains, the shallow slopes used in late summer are characteristically high elevation benches, secondary stream bottoms and riparian areas, and seeps where forage is lush and abundant (Servheen and Lyon 1989, p. 236).

4. Status and Distribution

Rangewide Status and Distribution

Historically, caribou were widely distributed throughout the northern tier of the coterminous U.S. from Washington to Maine, as well as throughout Canada. In the northwestern U.S., the mountain ecotype of woodland caribou occurred in Washington, Idaho, Montana and perhaps Wyoming (Cringan 1957, Flinn 1956, Evans 1960, Layser 1974). In Idaho, they occurred as far south as Salmon, Idaho (USFWS 1994). Historical accounts gathered from trappers, early settlers, prospectors, and forest workers - as compiled by Flinn (1956), Layser (1974), and others - indicate that caribou were plentiful in the northwestern U.S. in the 1800s, and, more specifically, that caribou in northern Idaho, northeastern Washington, and southern B.C. were abundant in the late 1800s to early 1900s (Layser 1974). However, as a result of habitat loss and fragmentation, over-hunting, and predation, caribou numbers have decreased, and their range has declined by approximately 60 percent (Mountain Caribou Technical Advisory Committee (MCTAC) 2002, Apps and McLellan 2006). Caribou were extirpated from New England by about 1916 and disappeared from the Great Lakes region by about 1940, although a few individuals have been observed in northeast Minnesota as recently as the early 1980s (49 FR 7390-7394). Today, caribou are completely absent from Minnesota, mainly due to changes in plant composition since the last glaciers receded 10,000 years ago. Currently, the entire global population of the mountain ecotype of woodland caribou occurs in 18 subpopulations within

B.C.[1], Idaho, and Washington (Wittmer 2004) (see Figure 1 in USFS 2013a). This includes the southern Selkirk woodland caribou subpopulation located along the Idaho, Washington, and B.C. border-the subject of this biological opinion. There are currently about 1,700 of the mountain ecotype of woodland caribou (B.C. Ministry of Environment 2012), with many subpopulations experiencing declines of 50 percent or more in the past 10 years (B.C. Ministry of Environment Mountain Caribou Science Team 2005).

Status of the Selkirk Caribou

Population Size

When the Selkirk caribou population was first listed in 1983, the population consisted of less than 30 individuals whose distribution centered primarily on Stagleap Provincial Park in B.C. Census efforts for the Selkirk caribou were initiated in 1991 under the lead of Idaho Department of Fish and Game (Compton et al. 1992). The winter census effort is conducted during the late winter period, usually between the months of February and April. A fixed-wing aircraft is used initially to locate areas where caribou occur. If necessary, a helicopter is then used to obtain a more accurate count of the total number of caribou within each detected group. Table V -3 presents caribou survey results from 2001 to 2012.

Table V -3. Selkirk caribou winter census results, 2001-2012.

Year	Recruitment *(% calves)*	Area Total *U.S./B.C.*	Grand Total
2001	No census due to low snowpack		---
2002	26%	2/32	34
2003	10%	1/40	41[a]
2004	7%	3/30	33
2005	---	2/33	35[b]
2006 fixed wing	---	1/33	34-37
2006 helicopter	17%		29-38
2007 fixed wing	---	2/42-43	43-44
2007 helicopter	9%		43
2008[c]	11%	3/43	46
2009[c]	11%	3/43	46
2010[c]	7%	2/41	43
2011[c]	8.3%	0/36	36
2012[c]	4.3%[d]	4/23	27

Source: Degroot and Wakkinen 2012, p.5.
a. Likely some double counting and therefore not a reliable count.

[1] Mountain caribou were provincially 'red-listed" (considered to be threatened or endangered) by B.C. in 2000. The population has been divided into 18 subpopulations, with the South Selkirk subpopulation being the only one that extends into the United States (Wittmer et al. 2005). Additionally, all woodland caribou located in the southern mountain national Ecological Area of B.C. and Alberta, regardless of ecotype, are listed as threatened under the Canada Species at Risk Act (MCTAC 2002).

b. Not a complete census. Must be considered a minimum count.
c. Combination fixed wing/helicopter survey
d. Four caribou not classified.

The Selkirk population reached the highest it's been in almost a decade in 2008 and 2009 at 46 animals (Wakkinen and Johnson 2008, Wakkinen et al. 2010). There were 43 animals observed again in 2010, representing the first decline in census numbers since years 2002 to 2004 (Wakkinen et al. 2010). The last two years of winter surveys indicates the population continues to decline with only 27 caribou located in 2012, including 23 in B.C. and 4 in the U.S. (DeGroot and Wakkinen 2012, p.5). Most of these animals occupy habitat in the B.C. portion of the recovery area (Wakkinen and Johnson 2006). A small number of Selkirk caribou occur within the U.S. portion of the recovery area, and it is highly probable there is continual movement of animals back and forth across the U.S./B.C. border.

Population Augmentation

As part of the strategy for Selkirk caribou recovery, two separate efforts were made to augment the Selkirk caribou population with transplanted animals. The first effort, led by IDFG, introduced 60 animals into the ecosystem between 1987 and 1990. The second effort, led by Washington Department of Fish and Wildlife augmented 43 animals into the ecosystem from 1996 to 1998; 32 caribou were placed into Washington and 11 were released in B.C. (Almack 2002, USFWS 2008a). By 1990, the observed portion of the population increased to approximately 61 animals counted during flights in March and April 1990 (Compton and Allen-Johnson 1990). However, the observed number declined through the early- to mid-1990's due to what is believed to be the result of increased rates of predation (Wakkinen and Johnson 2000). While these augmentation efforts did not result in a significant increase in caribou numbers and distribution, as had been hoped, the efforts are thought to have prevented the extirpation of the population (USFWS 2008a).

Factors Affecting the Status of the Selkirk Caribou Population

When Selkirk caribou were listed in 1984, hunting, poaching, vehicle collision mortality along B.C. Highway 3[2], and habitat modification by logging and fire were all identified as factors affecting their conservation status (49 FR 7390, February 29, 1984). These threats have been addressed to varying degrees over time in the Selkirk caribou ecosystem as described in our 5-year review (USFWS 2008a, pp. 21-31). The following sections summarize those findings.

Hunting, Poaching, and Vehicle Collision Mortality

Mortality due to poaching and vehicle collisions on B.C. Highway 3 were identified as primary risk factors for the Selkirk caribou population in 1983 (48 FR 1722, January 14, 1983 and USFWS 1985). Poaching and accidental shooting have been a lesser concern in the past two

[2] B.C. Highway 3 was completed in 1963 and is situated in the center of the southern Selkirk Mountain seasonal home range. It has been a chronic souce of caribou mortality due to its proximity to occupied caribou habitat, winter time salting of the surface which attracts caribou, avalanche control activities, high traffic speeds, and limited winter time visibility.

decades. Highway-caused mortality resulting from caribou crossing Highway 3 in B.C. remains a continued threat, with three caribou killed by motorists during the 2008/2009 winter season (Quinn 2009).

Habitat Modification From Logging and Fire

The primary long-term threat to woodland caribou is the ongoing loss and fragmentation of contiguous old-growth forests due to timber harvesting and wildfires (MCTAC 2002, Cichowski et al. 2004, Wittmer 2004, Apps and McLellan 2006). In 2002, the MCTAC estimated a 38 percent reduction in caribou habitat suitability from historic levels for B.C., Canada.

Federal land management agencies in the U.S. have modified their land management plans to address the conservation of caribou (see Section B.6 Inadequate Regulatory Mechanisms, below). In Canada, 282,515 acres of Crown Lands (i.e., public lands) have been protected from further timber harvest within the Selkirk Mountains to support caribou conservation. Additionally, the Nature Conservancy of Canada recently purchased and protected approximately 136,000 acres of caribou habitat surrounded by the Crown Lands (77 FR 71042, p.71066). Habitat management on lands managed by the USFS has improved since caribou were listed. Caribou habitat on State and private lands within the U.S. portion of the recovery area remains at risk of further degradation and fragmentation due to inadequate regulatory mechanisms to address timber management on these lands (see additional discussion below).

Wildfires are a natural phenomenon within the range of woodland caribou. High-elevation subalpine fir, Englemann spruce, and lodgepole pine forests historically have a fire return interval of 200-300 years and are likely close to their natural range of variability (Johnstone and Chapin III 2003). Locally, the IPNF estimated a fire return interval for subalpine fir of 30-50 years for mixed severity, and 150-175 years for stand-replacing events, based on their expertise and local research derived from the Priest River Experimental Forest (L. Allen 8/21/2013 pers. comm.). The frequency of wildfires vary, but fire is an important component of habitats for woodland caribou ecotypes as evidenced by the occurrence of fire-adapted seral tree species such as larch, lodgepole pine, western white pine, and Douglas-fir (Cooper et al. 1987). Many scientists believe that caribou evolved with fire and are successful occupants of habitats subject to fire (Bergerud 1974 and Miller 1976 as cited *In* Klein 1982, p. 390).

However, the effects of wildfire today may pose a threat to woodland caribou when added to the historical loss and fragmentation of caribou habitat from timber harvest, human development, and past wildfires. Past wildfires have affected large amounts of Selkirk caribou habitat (USFWS 2008a, 22-23). Wildfires that occurred from 1911-2010 have burned approximately 70,329 acres of caribou habitat on the IPNF (USFS 2013a, pp. 114 and 121). Other fires have burned caribou habitat in B.C. Canada. In 2006, the “Kutetl” fire in West Arm Park (B.C.) burned more than 20,200 acres of caribou habitat in the northern portion of the recovery area (DeGroot 2008b, as cited *In* USFWS 2008a, pp. 22-23). The regeneration of these burned forests into mature and old growth habitat suitable for caribou takes many decades, precluding a "quick fix" to address this major threat (ibid, p. 22). Past habitat loss and fragmentation has reduced the quality and quantity of caribou habitat on the landscape, thus, when a wildfire occurs today, caribou have less habitat available for displacement.

Habitat loss or modification from fire or timber harvest has the following effects on caribou:

1. it reduces the amount of useable space available for caribou to carry out their life cycle and limits the ecological carrying capacity of their habitat;
2. it reduces the arboreal lichen supply, affecting the caribou's key winter food source;
3. it may affect caribou movement patterns;
4. it may affect the caribou's use of remaining fragmented habitat because suitable habitat parcels will be smaller and discontinuous; and
5. it can make caribou more susceptible to predation as available habitat is compressed and fragmented (Cichowski et al. 2004).

Recently, the Service reevaluated the threats to Selkirk caribou and summarized six risk factors that the southern Selkirk population is facing (USFWS 2008a, p.31):

- past and ongoing habitat destruction/fragmentation,
- predation (by mountain lions and wolves),
- human access,
- inadequate regulatory mechanisms (to address timber harvest and winter recreation on some Federal, State and private lands),
- small population size, and
- potentially climate change.

With respect to habitat modification and fragmentation, new threats to caribou include changes in habitat that lead to increases in early seral habitat conditions within Selkirk caribou habitat may lead to an increase in alternate prey species (e.g. moose or deer) which in turn, supports higher predator densities (Bergerud and Elliot 1986, Seip 2008, p.3). Wittmer (2004) quantified this association for 17 out of the 18 populations of woodland caribou in B.C. and concluded that female adult survival rates were negatively associated with increasing amounts of young forest stands (Wittmer et al. 2007).

Specifically, habitat modification/fragmentation has the following effects that could cause increased predation pressure on caribou:

- Throughout the ecosystem on which the caribou depends, an increase in early-seral stands provides for enhanced production of understory shrubs and forbs, which attracts other ungulates (deer, elk, and moose) to shift their distribution into landscapes previously occupied primarily by caribou. Caribou usually occur at much lower densities than other ungulates, they have larger home ranges, and do not normally use the same habitats used by moose and deer. Therefore, this shift in ungulate distribution can, in turn, lead to an expansion in the distribution of predators, such as cougars and wolves, into caribou habitat where they opportunistically prey on caribou along with the other ungulates (App et al. 2013, p 9; Wittmer et al. 2005, p.265).
- Restricting caribou to remaining old-growth habitat patches may increase the search efficiency of predators. One of the survival strategies of woodland caribou is to maintain a sparse distribution across large expanses of contiguous old growth forest, making it more difficult for predators to find them. As these habitats become more fragmented into

smaller, disconnected patches, caribou are forced to concentrate more heavily in these remaining habitat patches, thereby facilitating an increase in predation levels (McLoughlin et al. p. 759).

- Increased road densities caused by timber-harvesting activities facilitate the movement of predators, such as wolves and cougars, into the caribou's range (Apps et al. 2013, pp.1, 9). Similarly, snowmobile trails may also facilitate predator access to caribou habitat (Messier et al. 2004, p 4).

The threats to caribou from predation are described in the section below.

Predation

Predation has become an increasing threat to caribou populations and is considered to be a proximal cause of most woodland caribou mortalities. Wittmer et al. (2005) evaluated the role of predation in the decline of woodland caribou and found that the primary cause of mortalities in 11 of 13 caribou subpopulations in B.C. was predation. He suggested that the loss of mature forests within the woodland caribou range may compromise their predator avoidance strategy.

Over the last three decades, several Selkirk caribou researchers have suggested that habitat modification may indirectly influence the population dynamics of large herbivores through changes in predator-prey relationships (Paquet 1997, Simpson et al. 1997, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004). However, early studies on the Selkirk population (Freddy 1974) did not find evidence that predation was an issue in the early 1970s and this assessment was subsequently incorporated into the augmentation effort (USFS 1985). However, once caribou were translocated into Idaho, Compton and Allen-Johnson (1991), Zager et al. (1995) and Compton et al. (1995) concluded that adult mortality was limiting the population growth of the newly-established herd, and predation by both mountain lions and bears were a contributing factor. The resulting steady decline in caribou located in Idaho during the winter census from 1994[3]-on was likely due to an unsustainable level of predation in the ecosystem (Wakkinen and Johnson 2000). The recent increase in wolves in-and-around the recovery area (USFS 2012 as cited *In* USFS 2013a, p. 107) presents an additional predation threat (USFWS 2008a as cited in USFS 2013a, p. 107).

Caribou generally persist in areas with low wolf density; however, wolf packs that overlap caribou ranges may elicit caribou declines. Whittington et al. (2011) found that wolves demonstrate a strong selection for linear features (i.e. seismic lines, roads, and trails) and that these features in caribou ranges increase wolf-caribou encounter rates and increase predation risk (ibid). Whittington et al. (2011, p. 1539) documented caribou mortalities and concluded that caribou are at highest risk to encounter wolves during the summer and fall, when wolves naturally occur at higher elevations. Of the 23 caribou mortalities documented in the study area (Banff and Jasper National Parks, Alberta, Canada), at least 12 were caused by wolves (ibid, p.1539).

[3] Some transplanted caribou did emigrate out of the Idaho relocation site.

Human Access

An on-going threat to woodland caribou is increasing human access into their habitat and the associated disturbance that it causes (Paquet 1997, pp. 10-12; Simpson and Terry 2000, Stevenson et al. 2001, p. 10; COSEWIC 2002, pp. 43-51, 55, MCTAC 2002, pp. 17-23; Cichowski et al. 2004, pp. 17-20; Seip et al. 2007). Apps and McLellan (2006, pp. 92-93) found that 'remoteness from human presence, low road densities, and limited motorized access' were important factors in explaining habitat occupancy in current caribou subpopulations.

Woodland caribou can be displaced from important habitats such as calving grounds (Joly et al. 2006) due to their avoidance of roads (Dyer et al. 2002, p. 538). Weir et al. (2007) documented avoidance by caribou in response to construction and operation of a mine during five seasons, illustrating the exceptional sensitivity of caribou to anthropogenic activities. Increasing road densities in caribou habitat may facilitate poaching opportunities, movement of predators within the caribou's range, and road kills (USFWS 2008a). A number of caribou in the Selkirk population have been killed in collisions with motor vehicles along Trans-Canada Highway 3 at Kootenay Pass about 5 miles north of the international boundary (Johnson 1976; Warren 1990, pp. 8-9; USFWS 2008a, p. 28). For example, a pregnant female and a calf from the Selkirk caribou herd were killed in 2009 in an unreported vehicle collision on Highway 3 (Quinn 2009, pp. 1-2). Several studies have reported that caribou avoid habitats near linear features and human activity such as roads, seismic lines, and drilling sites (Dyer et al. 2002, pp. 536-539; MCTAC 2002, pp. 17, 21-22; Cichowski et al. 2004, pp. 17-18; Whittington et al. 2011).

Outdoor recreation is the fastest growing use within the national forest and it is a use that is expected to increase in the future. The Forest reports that since the 1980s, both motorized and non-motorized recreation use of roads, trails, and general forest areas have increased (USFS 2013a, p.31). The Forest reports that foot, horse, and mountain bike travel have increased, as well and to a lesser degree, cross-country and backcountry skiing (USFS 2013a, p. 32). The following sections describe the potential risks to caribou from summer and winter recreation.

<u>Summer Recreation</u>

High elevation basins that include meadows and riparian areas are preferred habitat by woodland caribou, especially cows with calves. These areas also provide some of the most popular summer recreation destinations for backpacking, hiking, and camping with significantly increasing human use observed over the last two decades in the IPNF (USFS 2013a, p. 124).

High elevation glacial basins in the Selkirk Mountain ecosystem are preferred summer habitat for caribou and also preferred summer recreation destinations for humans. Allen (1998a, p.45) observed that cows and calves would only come down into the meadow complexes to feed at nightfall, when humans were not present, and they would move back into the timber when disturbed by humans. Additionally, it was this segment of the Selkirk caribou population that suffered heavy predator losses during the study. These data support the hypothesis that caribou and hiker interaction in caribou summer home ranges likely increases caribou susceptibility to predation by moving caribou into areas of reduced visibility (Dumont 1993, p.11).

A study of the impact of hikers on caribou in the Gaspesie Conservation Park, Quebec, Canada concluded that the frequency of hikers, regardless of group size, caused woodland caribou to move from preferred alpine areas into adjacent forested habitat. Dumont (1993) observed 102 "direct interactions" where hikers interrupted caribou activity on the Mount Jacques-Cartier summit between May and August, 1991. Of these observations, 64.4 percent resulted in caribou leaving the alpine area to adjacent forested habitat (ibid, pp.15, 31-33). Caribou used a limited section of the summit in the presence of hikers, and it is surmised that many of the caribou left the summit completely for the season (ibid, pp. 31-33).

In Norway, Reimers et al. (2006) tested the flight of caribou (*Rangifer tarandus tarandus*) in response to a single person approaching in a direct, steady and silent manner on foot or skis in March (winter), July (summer) and September-October (autumn hunting and rutting period). Results indicated that the median flight distance of caribou was higher in July (525 m) than in March (183 m) and September-October (122 m) (ibid, p. 409). The farther away the person was when first sighted by the caribou herd, the greater the flight distance and flight distances were greater among smaller caribou group sizes (ibid).

Displacement of caribou may be more likely if hikers are accompanied by dogs, as some prey species generally show higher levels of stress when dogs are present (Sime 1999, entire). Allen (1998a, p. 45) observed the harassment and movement of caribou by an unleashed dog in the Selkirk Mountain ecosystem. Recently, Parks Canada has banned dogs from all caribou habitat in Jasper National Park in an attempt to reduce stressors on the four distinct herds of woodland caribou in the park Also, information is provided to trail users regarding responsible travel in caribou habitat (Parks Canada website accessed on 8/8/2013, http://www.pc.gc.ca/eng/pn-np/ab/jasper/natcul/caribou-jasper.aspx).

Winter Recreation

Winter is a particularly stressful time for caribou. Their mobility is restricted by deep snow, and their nutritional intake is exceptionally limited due to their dependency on arboreal lichen to survive during this period. There is growing evidence that increasing levels of winter recreation activities (e.g., snowmobiling, heli-skiing, snow-cat skiing, etc.) within the caribou's winter range represent a significant threat to woodland caribou (USFWS 2008a, p. 28). Winter recreation can increase the stress levels of caribou, displace them from suitable winter habitat, or preclude them from using such habitat. Recreation impacts can significantly affect their normal behaviors such as feeding, breeding, and sheltering, which could ultimately affect their survival capability (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, p. 18; Cichowski et al. 2004, pp. 17-18; Powell 2004, Seip et al. 2007).

Simpson and Terry (2000) evaluated the effects of several forms of winter recreation on woodland caribou and found that snowmobiling represents the greatest perceived threat. Deep snow, open forests, and scenic vistas make late winter caribou habitat very attractive to recreational snowmobilers. The increasing popularity of snowmobiling and recent advances in snowmobile technology, combined with additional road systems, now allow recreationists easier access to high elevation caribou winter ranges (MCTAC 2002, pp. 18, 23, 60). However, because this habitat is particularly important to woodland caribou, their disturbance or

displacement by snowmobilers, especially given the current fragmented nature of woodland caribou winter habitat, can have severe effects on woodland caribou (MCTAC 2002, pp. 18, 22).

Effects of winter recreation on Svargard reindeer and caribou can result in a short-term loss of habitat availability (Tyler 1991, p. 191; Mahoney et al. 2001) or can lead to long-term abandonment of areas when the disturbance is chronic. In both scenarios, additional energy is expended by reindeer and caribou when they flee an area to avoid disturbance (Tyler 1991 as cited *In* USFS 2004).

Simpson (1987) concluded that large groups of fast-moving snowmobile machines in combination with human scent caused woodland caribou to abandon an area previously used as winter habitat. High quality winter habitat in the Quesnel Highland received minimal use by caribou during late winter when snowmobile use increased to daily occurrences.

Kinley (2003) documented similar behavioral observations with woodland caribou in southeastern and east-central B.C. As snowmobile use increased in extent and intensity within winter ranges, caribou abandoned or were extirpated from areas that were formerly frequented or declined in numbers within areas that were still occupied.

Seip et al. (2007) evaluated the effects of snowmobile use on caribou winter range selection in central B.C. They conducted aerial censuses over 4 winters on 5 discrete mountain ranges within one herds' winter range. They documented caribou use on the 4 mountain ranges with little or no snowmobile activity during each census and no caribou use on one mountain range that experienced extensive snowmobile activity during 3 of the 4 censuses. When caribou did use the mountain range with extensive snowmobile activity, the most-used areas were inaccessible by snowmobilers. Based on their evaluation, they concluded that intensive snowmobile activity had displaced caribou from known high quality winter habitat (Seip et al. 2007, pp. 1543-1544).

Nelleman et al. (2010) examined caribou avoidance of ski resorts in Norway and found that caribou avoided (on average) a 15 km zone surrounding ski resorts. The avoided area could reach up to 25 km, depending on the resort size and the degree of human activity (ibid, p. 878). In an experiment, they relocated a cabin and ski trails in historical caribou habitat and found that the adjacent caribou herd gradually shifted their distribution to incorporate this previously avoided area. This indicates a potential for caribou to reestablish use of habitat once human activity is removed (ibid, pp. 877-879).

Powell (2004) studied the effects of recreational snowmobile use on caribou in the southern Yukon and found that: (1) caribou moved away from this disturbance; (2) maternal groups responded more than did male groups, being twice as likely to flee from an approaching snowmobile and spending more time moving and being vigilant after the disturbance; (3) caribou did not display habituation or sensitization to the disturbance; and (4) wolves frequently used snowmobile trails, possibly leading to increased predation on caribou. Especially in areas where suitable winter range is scarce, disturbance to caribou may cause them to shift into less preferred habitat, which increases the risk of mortality from malnutrition, predation, and avalanches. Snowmobile trails provide hard-packed travel corridors for predators to move into caribou habitat (Bloomfield 1979, Neumann and Merriam 1972, Robinson et al. 2010, p. 87). Wolf predation is often responsible for adult caribou mortality and low recruitment in caribou

populations within Canada (Bergerud and Ballard 1988, Gasaway et al. 1983, Seip 1991, Stevenson and Hatler 1985).

Inadequate Regulatory Mechanisms

Inadequate regulatory mechanisms particularly as they relate to timber harvest and winter recreation on some Federal, State, and private lands are recognized as a threat to the recovery of woodland caribou (USFWS 2008a, p. 31).

Since the caribou was listed, the IPNF implemented its Land and Resource Management Plan (i.e., existing Plan, 1987) which included general standards pertaining to the caribou. The application of these standards by the IPNF has resulted in the design of all vegetation management projects on the Forest since 2001 so as to "not likely to adversely affect" the caribou. The IPNF affirmed in a September 18, 2008, letter to the Service that individual project-level planning and analysis considers the best available science, providing a mechanism through which updated and emerging information on caribou habitat needs can be used (USFS 2008).

Relative to human access within caribou habitat, the IPNF's existing plan currently includes generic standards that allow motorized use restrictions when needed to protect caribou, although these standards do not address how, when, and where to impose such restrictions given the programmatic nature of the existing Forest Plan (USFS 1987). The IPNF recently finalized the Grizzly Bear Access Amendment which generally moderates the miles of road in grizzly bear habitat and provides large blocks of habitat in grizzly bear management units (BMUs) where motorized use of roads and trails is prohibited (USFS 2011c, entire). Since 96 percent of the Selkirk caribou recovery area overlaps the grizzly bear recovery area BMUs, the Access Amendment similarly provides benefits for caribou. Specifically, more than 55,400 acres of secure habitat (i.e. devoid of motorized routes) has been created within the caribou recovery area on NFS lands since the mid-1980s as a result or road closures to benefit grizzly bears (USFS 2013, page 122).

There is currently no plan in place to address winter over-snow motorized access throughout the IPNF portion of the caribou recovery area, although pursuant to a Court injunction, winter travel within caribou habitat on the IPNF is restricted in 71 percent of the caribou recovery area that is open to over-snow motorized use until a winter travel plan is finalized and any appropriate ESA consultation completed.

The Colville National Forest Land and Resource Management Plan in Washington has been revised to incorporate special management objectives and standards to address the threat to caribou on NFS lands (77 FR 71042-71082, p.71071). The Colville National Forest also manages winter recreation in areas of potential conflict between snowmobile use and caribou, specifically in its Newport/Sullivan Lake Ranger District (ibid).

A significant amount of State and private lands (approximately 89,595 acres) occurs within the caribou's range (USFS 2013a, pg. 110). Idaho Department of Lands administers approximately 61,883 acres within the range of the Selkirk caribou. These lands are managed primarily for timber harvest, which, as discussed above, can affect caribou and its habitat. A habitat assessment (Kinley and Apps 2007) of IDL lands within the Selkirk recovery area indicated that

one of the largest blocks of 'high priority' caribou habitat in the recovery area is centered on IDL property and adjacent USFS lands. The IDL was considering a Habitat Conservation Plan (HCP) to protect caribou and other listed species on their lands. However, no commitments or progress toward an HCP have been made and, thus, no binding conservation measures for caribou or their habitats are implemented. Most private lands within caribou habitat in the U.S. are managed for timber values, and there are currently no regulatory mechanisms, guidelines, or standards in place addressing caribou habitat management or protection for these lands, except as the take prohibitions under section 9 of the ESA may apply.

In B.C., woodland caribou habitat management direction is contained in land management plans and Higher Level Plans, both at the regional scale. These various plans provide caribou habitat requirements for timber harvesting on Provincial lands, but they do not apply to private lands in B.C. (DeGroot, B.C. Ministry of Environment, 08/23/2007 pers. comm. as cited *In* USFWS 2008b, p. 80). In Canada, 282,515 acres of Crown Lands have been protected from further timber harvest within the Selkirk Mountains to support caribou conservation. Additionally, the Nature Conservancy of Canada recently purchased and protected approximately 136,000 acres of caribou habitat surrounded by the Crown Lands (77 FR 71042, p.71066).

Small Population Size

The contracting range of the Selkirk caribou population, the small number of animals in the population, and the limited genetic exchange between this population and adjacent populations all threatens their long-term population viability (Hatter 2000; USFWS 2008a).

Climate Change

In our most recent 5-year status review (USFWS 2008a) we noted that climate change can potentially alter the distribution and amounts of Selkirk caribou habitat by altering disturbance processes (i.e. fire regimes) and winter snowpack depths (ibid). The current and future regional and local conditions resulting from climate change are described in Chapter 2.B.7. Climate Change.

Certainly, climate change has the potential to affect the quantity, quality, and distribution of caribou habitat, both at a broad regional scale as well as at the local stand level. Some forest types are likely to expand, while others may retreat or shift. Because the annual cycle of woodland caribou is so closely tied to changing snow depths, changes in snow levels may also have significant effects on caribou. However, the information currently available on the effects of global climate change and increasing temperatures does not make sufficient estimates of the location and magnitude of the effects. Nor are we aware of any climate change information specific to the habitat of the southern Selkirk Mountains population of Selkirk caribou that would indicate what areas might become important to the species in the future (77 FR 71042-71082, November 28, 2012, p.71068).

5. Recovery Area

The 1994 Recovery Plan identifies recovery goals, objectives, and tasks necessary for recovery of the species (USFWS 1994). The primary issues for Selkirk caribou identified in the 1994

Recovery Plan included: 1) reduction in source habitat in key portions of caribou range, 2) illegal shooting including accidental shooting by deer and elk hunters, 3) predation by mountain lions, bears, wolves, and coyotes, 4) mortality from vehicle collisions, and 5) displacement resulting from disturbance. As a result of these issues, the Plan's objectives focused on reducing human-caused mortality, identifying and reducing other sources of mortality, and habitat protection and enhancement. Although the 1994 Recovery Plan is somewhat dated, the threats and conservation needs outlined in the plan are fully supportive of those discussed above.

The 1994 Recovery Plan covers the Selkirk caribou recovery area including portions of the Colville National Forest in Washington, the northern portion of the IPNF, the IDL, and a portion in B.C., Canada. The recovery area for caribou in the Selkirk Mountains is comprised of approximately 1,500 square miles in southern B.C., northeastern Washington, and northern Idaho. Fifty-three percent of the recovery area is located in B.C., while the remaining 47 percent falls into the U.S. (Table V -4). Twenty-seven percent of the caribou habitat in the Selkirk recovery area and 57 percent of the caribou habitat in the U.S. portion of the Selkirk recovery area is on the IPNF. State and private lands are included within both recovery zones, with the recovery area incorporating 97 square miles of habitat on lands managed by IDL.

Table V -4. Existing land management jurisdiction within the Selkirk caribou recovery area.

Land Ownership	Size & Percent of Total (Acres/%)
Idaho Panhandle National Forests	252,785 /27
Colville National Forest	102,907 / 10
Idaho Department of Lands	61,882 / 7
U.S. Private[1]	27,713 / 3
British Columbia	501,112 / 53
Total	**946,400**

Source: USFS 2013a, Table 30.

[1] Within the boundaries of the Colville NF=9,351; Idaho Panhandle NF=18,362 acres.

As described above in Section A.2, the recovery area is divided into 17 CMUs to facilitate habitat evaluation within the ecosystem. Each CMU approximates the size of the average home range of Selkirk caribou in the Selkirk Mountains (about 30 square miles or 19,200 acres) (USFS 1985). These CMUs assist with analyzing and tracking cumulative effects (ibid). There are 12 CMUs on the IPNF, four situated on the Colville National Forest (CNF), and one CMU located exclusively on lands owned by IDL (see Figure 8 in USFS 2013a). Although a significant portion of the recovery area is located within B.C., CMUs have not been formally designated in B.C.

The status of the CMUs on the IPNF is addressed below in Section C.1. The Land and Resource Management Plan for the CNF in Washington include special guidelines for managing caribou habitat in the CMUs on the CNF. Habitat that is presently suitable is protected from harvest. The CNF is also working to reduce potential conflicts between snowmobile use and caribou on the high-elevation ridges in the recovery area.

One CMU (63,450 acres) is located on IDL lands and is managed primarily for timber production (timber stands with planned, scheduled entries for the purpose of generating commercial timber products). A recent habitat assessment (Kinley and Apps 2007) of IDL lands within the Selkirk recovery area indicated that one of the largest blocks of high priority caribou habitat in the recovery area is centered on IDL property and adjacent USFS lands. On that basis, IDL property is considered to contribute significantly to caribou habitat within the Selkirk Ecosystem (Kinley and Apps 2007).

6. Conservation Needs

Based on consideration of the above threats, the primary conservation needs of the Selkirk caribou population can be summarized as follows (USFWS 2008a):

1. Expand the size and distribution of the existing population.

2. Protect and restore large blocks of old-growth conifer forests preferred by Selkirk caribou on public lands.

3. Manage caribou predators in occupied habitat on an as needed basis until sufficient amounts of old-growth conifer forest are restored.

4. Manage human access to caribou habitat to avoid and minimize adverse effects to caribou caused by disturbance, especially during the winter when caribou are especially vulnerable to this impact.

5. Maximize the resiliency of the caribou population to the adverse effects of climate change by achieving (1)-(4) above.

7. Status of Critical Habitat

Critical habitat was designated on November 28, 2012, and became effective on December 28, 2012 (77 FR 71042).

Conservation Role and Description of Critical Habitat

The majority of habitat essential to the conservation of the southern Selkirk Mountains population of Selkirk caribou occurs in B.C (77 FR 71042, p. 71066). In Canada, 282,515 acres of Crown Lands have been protected from further timber harvest within the Selkirk Mountains to support caribou conservation. Additionally, the Nature Conservancy of Canada recently purchased and protected approximately 136,000 acres of caribou habitat surrounded by the Crown Lands. Thus, adding the critical habitat designation in the U.S. portion of the southern Selkirk Mountains caribou population makes an essential contribution to the conservation of the species by facilitating continued movement and seasonal habitat use and other behaviors that this population currently and historically exhibited (ibid). In determining which areas to propose as critical habitat, the Service considered the physical and biological features that are essential to the conservation of the southern Selkirk Mountains population of woodland caribou and that may require special management considerations or protection. These features are the Primary

Constituent Elements (PCEs) laid out in appropriate quantity and spatial arrangement for the conservation of the species. The PCEs of designated critical habitat for southern Selkirk Mountains population of Selkirk caribou are:

1. Mature to old-growth western hemlock (*Tsuga heterophylla*)/western red cedar (*Thuja plicata*) climax forest, and subalpine fir (*Abies lasiocarpa*)/Engelmann spruce (*Picea engelmanni*) climax forest at least 5,000 ft (1,520 m) in elevation; these habitats typically have 26-50 percent or greater canopy closure.
2. Ridge tops and high-elevation basins that are generally 6,000 ft (1,830 m) in elevation or higher, associated with mature to old stands of subalpine fir (*Abies lasiocarpa*)/ Engelmann spruce (*Picea engelmanni*) climax forest, with relatively open (approximately 50 percent) canopy.
3. Presence of arboreal hair lichens.
4. High-elevation benches and shallow slopes, secondary stream bottoms, riparian areas, and seeps, and subalpine meadows with succulent forbs and grasses, flowering plants, horsetails, willow, huckleberry, dwarf birch, sedges and lichens. The Southern Selkirk Mountains population of Selkirk caribou, including pregnant females, use these areas for feeding during the spring and summer seasons.
5. Corridors/Transition zones that connect the habitats described above. If human activities occur, they are such that they do not impair the ability of caribou to use these areas.

Current Range-wide Condition of the Southern Selkirk Mountains Population of Woodland Caribou Critical Habitat

The Selkirk Mountains Critical Habitat Unit consists of 30,010 acres in Boundary County, Idaho and Pend Oreille County, Washington (77 FR 71042, p. 71074). These lands contain the physical and biological features that are essential to the conservation of the southern Selkirk Mountains population of Selkirk caribou and that may require special management considerations or protection. Lands within this unit are at 5,000 feet and higher in elevation (ibid). These lands are under Federal ownership, within the Colville and Idaho Panhandle National Forests (Table V -5). These lands were occupied both at the time of emergency listing on January 14, 1983 (48 FR 1722) and the final listing on February 29, 1984 (49 FR 7390). Both Forests incorporated standards for caribou habitat management in their existing land and resource management plans (77 FR 71042, p. 71071). These efforts contributed to the protection of the essential PCEs.

Table V -5. Designated critical habitat for the Southern Selkirk Mountains population of Selkirk caribou.

	Land Ownership by Type and Acres			
Critical Habitat by County	Federal	Private	State	Total
Boundary County, ID	6,029	0	0	0
Pend Oreille County, WA	23,980	0	0	0
Unit Total	30,010	0	0	30,010

Actions That May Affect Designated Critical Habitat

The final rule (77 FR 71042) described four types of actions that may adversely affect critical habitat. Briefly, these are:

(1) Actions that would reduce or remove mature old-growth vegetation (greater than 100–125 years old) within the cedar/hemlock zone and subalpine fir/Englemann spruce zone at higher elevations stands (at or greater than 5,000 feet, including the ecotone between these two forest habitats. These activities could significantly reduce the abundance of arboreal lichen habitat, such that the landscape's ability to produce adequate densities of arboreal lichen to support persistent Selkirk caribou populations is at least temporarily diminished.

(2) Actions that would cause permanent loss or conversion of old growth coniferous forest on a scale proportionate to the large landscape used by southern Selkirk Mountains population of woodland caribou. Such activities could eliminate and fragment Selkirk caribou and arboreal lichen habitat.

(3) Actions that would increase traffic volume and speed on roads within southern Selkirk Mountains population of woodland caribou critical habitat areas. These activities could reduce connectivity within the old growth coniferous forest landscape for Selkirk caribou.

(4) Actions that would increase recreation in southern Selkirk Mountains population of woodland caribou critical habitat. These activities have the potential to displace the southern Selkirk Mountains population of woodland caribou from suitable habitat or increase their susceptibility to predation.

Selkirk caribou strongly prefer old growth forests to young forests in all seasons. In designated critical habitat, management actions that alter vegetation structure or condition in young forests over limited areas may not represent an adverse effect to caribou critical habitat. However, an adverse effect could result if these types of management activities reduce and fragment areas in a manner that creates a patchwork of different age classes or prevents young forests from achieving old-growth habitat characteristics.

8. Analysis of the Species/Critical Habitat Likely to be Affected

The Selkirk caribou is a local population of the mountain ecotype of woodland caribou. This population occurs in high elevation (generally above 4,000 feet elevation), steep terrain of the mountainous southeastern and east-central portions of B.C., and the Selkirk Mountains of northern Idaho and northeastern Washington. The mountain caribou ecotype primarily occupies old-growth cedar/hemlock and spruce/fir forests that typically have high snow levels, and feeds almost exclusively on arboreal lichen during the winter. Selkirk caribou make seasonal elevational movements in response to factors such as snow level, food availability, and predator avoidance.

Caribou on IPNF lands may be affected by management activities that reduce or degrade essential habitat elements used by caribou for foraging and recruitment, or that increase habitat fragmentation and risk of mortality by predation. This biological opinion evaluates these effects with respect to the proposed action.

Critical habitat has been designated for Selkirk caribou within the action area, which lies in Boundary County, of the critical habitat unit. The biological assessment for the Revised Plan determined that the proposed action may adversely affect designated critical habitat for Selkirk caribou.

C. ENVIRONMENTAL BASELINE

The environmental baseline section is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat, if applicable), and ecosystem, within the "action area" (USFWS and NMFS 1998, p. 4-22).

The "environmental baseline" includes:

- the past and present impacts of all Federal, State, or private actions and other human activities in an "action area,"

- the anticipated impacts of all proposed Federal projects in an "action area" that have already undergone formal or early section 7 consultation,

- and the impact of State or private actions that are contemporaneous with the consultation in process.

1. Status of the Species and Critical Habitat in the Action Area

Within the action area, the status of Selkirk caribou and designated critical habitat are affected by the same mechanisms affecting the overall status of the population in the recovery area, as described above in the section B. Status. Additional information specific to the action area is provided below.

Status of Selkirk Caribou in the Action Area

Recently, only a small number of Selkirk caribou have been documented utilizing habitat within the action area. Specifically, between 2001 and 2012, 0 to 4 caribou (Table V -3), were detected utilizing habitat in winter in the area of Little Snowy Top/Shedroof Divide in the U.S. (USFS 2013a, p. 107). It should be noted, however, that data from Table V -3 are gathered through winter track surveys conducted a few times during the winter each year. Thus, it is possible that additional undetected caribou use habitat in the action area, and that such habitat is used more extensively within the Recovery Area in the U.S. during other seasons than the winter census surveys are able to detect.

Status of Caribou Critical Habitat in the Action Area

The action area is located in the Selkirk Mountains critical habitat unit in Boundary County, Idaho. This unit is occupied by Selkirk caribou and contains physical and biological features essential for the conservation of the species. On the IPNF, all critical habitat falls within a single CMU: Big Snowy. This includes a total of 6,508 and 1,006 acres of SAF and CH habitats, respectively, that is dominated by older age classes (>100 years old=66 percent). Another 987 acres is comprised of non-forested high-elevation habitat.

There are few existing conditions presenting effects, or risk of effects, to caribou within critical habitat on the IPNF. Wildfire and the impact of insects and disease continue to be the primary factors affecting changes in caribou habitat conditions on the Forest, as there have been essentially no changes to caribou habitat on NFS lands in the past 20 years as a result of timber harvest on NFS lands[4]. No prescribed fires have occurred in critical habitat (USFS 2013a, p. 122). There are no roads located in critical habitat and there are no groomed snowmobile routes, designated over-snow routes, or use areas located in critical habitat (ibid, pp.122, 123). Additionally, there are no grazing allotments, mining, or special use permits or agreements in critical habitat (ibid, p.123).

2. Factors Affecting the Status of Caribou and the Condition of Caribou Critical Habitat in the Action Area

Within the action area, the factors affecting the status of Selkirk caribou and designated critical habitat are similar to those described for the overall status of the population in the recovery area, (Section B. Status). Additional information specific to the action area is provided below. The factors addressed include: habitat availability, habitat modification, fragmentation, predation, and human access. Other factors potentially affecting caribou in the action area as described in the BA (USFS 2013a, p. 121-124) include livestock grazing, mining operations, and special use permits and agreements.

Distribution and Quantity of Caribou Habitat

As stated previously, woodland caribou (including Selkirk caribou) are closely tied to mature and old-growth boreal forests. Thus, quantifying the availability and distribution of these forests on the landscape enables an assessment of the existing condition of caribou habitat within the action area and the habitat's ability to support the demographic and reproductive needs of the Selkirk caribou population. Several models have been developed to quantify and describe caribou habitat in the recovery area (USFS 2013a, p. 110-113). In 2011, as part of the process for designating caribou critical habitat, the Service generally characterized Selkirk caribou habitat as mature and old-growth Engelmann spruce/subalpine fir (SAF) and western red cedar/western hemlock (CH) habitats. Accordingly, the Forest quantified Selkirk caribou habitat into three age categories (0-99, 100-150, and 151+ years old) and three dominate cover types (SAF, CH,

[4] Prior to 1987, the Forest Service completed approximately 7,100 acres of stand replacing timber harvest within the caribou recovery area. Since 1987, there is been less than 5,400 acres of timber harvest on the IPNF and these treatments were designed to move unsuitable habitat conditions towards suitable habitat (USFS 2013a, p. 122)

CH/Other) to provide an up-to-date (2011) estimate of available caribou habitat on the IPNF by CMU regardless of fixed topographical features (i.e. slope, elevation, aspect) that may also influence seasonal habitat selection. This approach is more useful when discussing potential effects due to land management activities on habitat (e.g. timber harvest, prescribed burning) because of its simplicity and emphasis on existing vegetation conditions in terms of cover type and stand age. Stand age is included because it is a useful predictor of arboreal lichen abundance (Stevenson et al. 2001). Table V -6 provides a summary of available Selkirk caribou habitat on the IPNF as of 2011. As shown in Table V -6, the majority of SAF, CH, and CH/Other habitat within the recovery area is greater than 100 years old, and these habitats are well distributed throughout the designated CMUs. That is, 61 percent of the forested caribou habitat on the IPNF is currently suitable habitat for caribou (determined from Table V -6 by summing total acres of stands >100 years old and dividing by total forested acres of caribou habitat). Therefore, habitat condition is not considered to be limiting the growth of this population at this time (MCTAC 2002 and USFWS 2008a, p. 21).

Habitat Modification from Timber Harvest and Fires

Wildfire and the impact of insects and disease continue to be the primary factors affecting changes in caribou habitat conditions, as there have been essentially no changes to caribou habitat on NFS lands in the past 20 years as a result of timber harvest on NFS lands (USFS 2013a, p.121). Currently, more than **61 percent** of all caribou habitat types that are capable of growing trees in the action area are 100 years or older (SAF=65 percent; CH/Other=57 percent) (Table V -6). Of the habitat that is less than 100 years old, approximately 12,500[5] acres were the result of timber harvest over the last eight decades, while the remaining 70,329 acres of immature habitat was the result of wildfires that occurred after 1911 (ibid, as calculated from information on p. 114 and 121).

[5] Prior to 1987, the Forest Service completed approximately 7,100 acres of stand replacing timber harvest within the caribou recovery area. Since 1987, there has been less than 5,400 acres of timber harvest on the IPNF in the caribou recovery area and these treatments were designed to move unsuitable caribou habitat conditions towards suitable habitat (USFS 2013a, p. 121).

Table V -6. Woodland caribou habitat by caribou management unit (CMU), general cover type, and stand age on the IPNF (USFS 2013a, Table 31).

Caribou Management Unit (ID #)	Size of CMU (Acres)	Spruce/Subalpine Fir[1]			Cedar/Hemlock			Cedar Hemlock/Other[2]			Total Forested Caribou Habitat (Acres)
		Age			Age			Age			
		<100	100-149	>150	<100	100-149	>150	<100	100-149	>150	
Big Snowy (9)	24,762	2,318	5,099	0	3,585	8,001	33	1,393	2,253	0	22,682
Cow (2)	24,975	4,805	3,484	2,022	478	967	1,197	5,856	1,763	854	21,426
Grass (1)	26,160	4,210	5,207	1,440	135	829	1,323	4,145	4,277	1,027	22,593
Grassy Top (11)	16,558	4,615	556	0	1,008	487	0	6,250	297	0	13,213
Gold (10)	21,856	1,539	2,054	0	2,409	6,829	0	5,131	1,397	0	19,359
Long (4)	31,186	4,446	9,601	6,390	236	769	1,328	1,184	1,767	968	26,689
Myrtle (6)	21,992	1,213	1,933	6,500	244	180	912	2,103	851	1,151	15,087
Pack River (12)	19,566	4,192	4,354	511	8	216	0	2,242	1,271	0	12,794
Smith (3)	22,517	2,678	1,458	4,071	525	297	1,128	1,198	918	1,099	13,372
Snow (7)	19,953	3,074	1,730	21	146	306	0	2,684	1,014	0	8,975
Trout-Ball (5)	25,703	2,983	4,847	8,285	18	434	702	1,235	1,241	1,790	21,535
Upper Priest (8)	16,825	1,511	249	930	1,511	3,696	3,396	1,403	1,099	861	14,656
Total:	**272,053**	**37,584**	**40,572**	**30,170**	**10,303**	**23,011**	**10,019**	**34,824**	**18,148**	**7,750**	**212,381**

[1]Includes whitebark pine dominated high elevation sites.

[2]Other category represents cedar/hemlock habitat types with a combination of cedar, hemlock, lodgepole, Douglas-fir, white fir, western larch cover types which may/may not provide the characteristics associated with mature and old growth cedar/hemlock stands used by Selkirk caribou during the early winter period.

Approximately 75 percent of Selkirk caribou habitat on the IPNF was set back to an early successional stage by the wildfires that occurred prior to 1870 (USFS 2013a[6]) with similar patterns noted on the IDL portion of the recovery area (Allen 1998b and L. Allen 8/21/2013 pers. comm.). As noted earlier, approximately 70,329 acres of Selkirk caribou habitat was altered by wildfires from 1911-2010, which includes the large 1967 Sundance and Trapper Creek fires. Layser (1974 p. 51) reported that these fires burned almost 80,000 acres of caribou habitat. However, those numbers were reported without the benefit of GIS analysis, and have since been refined by the IPNF in its Revised Plan BA through the use of GIS and more accurate vegetative data layers. To clarify, much of the fires described by Layser (1974) re-burned recovering caribou habitat; occurred on high-elevation cliff faces; or occurred at lower elevations in the recovery area in low quality caribou habitat (L. Allen 7/31/2013 pers. comm.). The Trapper Creek Fire was the largest to burn within the U.S. portion of the recovery area in recent decades. In 1967, it burned approximately 7,600 acres of spruce/fir and 1,500 acres of cedar/hemlock habitat on NFS lands (USFS 2013a, p. 122). Since implementation of the existing plan in 1988, mixed-severity or stand-replacing fires have affected approximately 7,700 acres of caribou habitat; these fires averaged less than 480 acres and not all of the acres were located in quality caribou habitat (USFS 2013a, p. 122).

To put the effects of these fires in perspective, the IPNF states that site-specific landscape analyses of changes in vegetation over time demonstrate an increase and/or maintenance in the amount and distribution of larger size classes of subalpine fir and moist, mixed-conifer (cedar, hemlock, grand fir, and larch forest) as the ecosystem recovered from large wildfires from 1880 to 1890 and 1910 to 1946 (Allen 1999, USFS 2000, USFS fire history maps as cited *In* USFS 2013a, p. 115). Thus, based on this analysis, 61 percent of the recovery area on the IPNF is now over 100 years old and 22.5 percent is 150 years or older. The Service acknowledges that stands younger than 150 years old may provide suitable caribou habitat, if adequate tree structure and density is present to support appreciable lichen loading. However, relative to lichen abundance and tree structure, in these younger stands the habitat is often not fully established yet as it typically takes at least 150 years for forested stands to develop vegetative characteristics (e.g., old-growth, and lichen loading) considered to provide optimum conditions for caribou (Paquet 1997, p. 15), and for which mountain caribou exhibit strong preference (Stevenson et al. 2001, p. 12).

Most prescribed burning within the caribou recovery area has been associated with post-harvest treatments; although, in recent years there have been several wildlife-oriented burns conducted on dry-site habitats at lower elevations and a separate landscape burn to benefit whitebark pine (USFS 2013a, p. 122). Since 2000, the IPNF has conducted 17 prescribed fire operations and burned approximately 640 acres of caribou habitat within five CMUs in the recovery area. None of these occurred in what is now designated critical habitat.

Overall, vegetation management activities have not contributed to substantive changes in caribou habitat or critical habitat since implementation of the existing plan. The IPNF reports that the

[6] Calculated from Table 31 on page 114.

primary mechanisms affecting caribou habitat are wildfires and disease and insect outbreaks. Also, the IPNF states that **61 percent** of all caribou habitat types that are capable of growing trees in the action area are 100 years or older.

Fragmentation

On the IPNF, the existing plan included direction for the "retention and management of established caribou travel corridors that occur in mature timber" (USFS 1987). As described above, since 1987 fewer than 8,000 acres of caribou habitat have been affected by stand-replacing fires and fewer than 5,000 acres have been subject to timber harvest. Current timber and fire management practices are not contributing to fragmentation of caribou habitat or caribou critical habitat in the action area.

Predation

Conditions that may contribute to negative caribou/predator relationships include: reduced old-growth patch sizes that increase search efficiency of predators; roads that may facilitate predator access into caribou habitat; and timber harvest that creates early-seral stands attracting other ungulates that then draw predators.

Current management that limits these conditions on the Forest include: standards and guidelines for management activities in caribou habitat under the existing plan as described in Section A; implementation of the Grizzly Bear Access Amendment, which limits motorized road densities in grizzly bear recovery zones; and implementation of the NRLMD, which limits the amount of stand initiation structural stage habitat within a lynx analysis unit.

Since 1987, there has been fewer than 5,400 acres of timber harvest on the IPNF in the caribou recovery area and these treatments were designed to move unsuitable caribou habitat conditions towards suitable habitat (USFS 2013a, p.115). Hence, current management practices are not contributing to reduced old-growth patch sizes.

Under existing baseline conditions, there are 166 miles of wheeled motorized access in caribou habitat (Table V -7). An additional 25 miles occur in non-habitat in the recovery area. The roaded condition of caribou habitat on the IPNF contributes to predation risk for caribou in action area (see for example Apps et al. 2013, pp.1, 9). However, having some roads on the landscape facilitates hunter access for mountain lion hunting and wolf trapping, which provides some level of control over the predator population in the action area (Apps et al. 2013, p. 9; Hayden et al. 2007, pp.6-7; L. Allen 8/21/2013 pers. comm.).

In 2011, the IPNF implemented the Grizzly Bear Access Amendment in the grizzly bear recovery zone BMUs on the Forest. Ninety-six percent of the Selkirk caribou recovery area overlaps with the Selkirk grizzly bear recovery zone BMUs (USFS 2013a, p. 118). The Access Amendment includes road density and core habitat requirements and limits new road construction in affected BMUs. Wheeled motorized vehicle access management strategies for grizzly bear have created approximately 55,400 acres of secure habitat (i.e. devoid of wheeled motorized routes) within the caribou recovery area on NFS lands from the mid-1980s to 2009 (USFS 2013a, p. 122).

Table V -7. Current motorized access and over-the-snow access within the Selkirk caribou recovery area on the IPNF (USFS 2013a, Table 35).

Type of Allowable Access[1]	Non-Habitat in the Recovery Area	Woodland Caribou Habitat		
		Non-Forested	High Elevation Spruce/Fir	Low Elevation Cedar/Hemlock
Wheeled Motorized Access Routes (miles)	25	1	24	141
Groomed & Designated Over-Snow Routes (miles)	2	0	3	25
Over-Snow Motorized Use (acres) [1]	2,212	3,620	10,554	6,925

1. Includes all acres on NFS lands within recovery area including high elevation non-forested areas, meadows, and dry-site forested areas. Many of these areas have limited accessibility for snowmobiling off-route due to tree densities and topography (USFS 2011b, p.204).

Lastly, 58 percent of the Selkirk caribou recovery area overlaps with the Selkirk LAUs where the NRLMD is implemented (ibid). Under the NRLMD, the rate of conversion of mature, multistory foraging habitat to early-seral stage stands is constrained by decade. Additionally, each LAU may contain no more than 30 percent of lynx habitat in an early seral-stage stand condition. These standards limit the total amount of early seral-stage stands created by timber harvest in the caribou habitat that overlaps LAUs and thereby limits stands that may attract other ungulate species that in turn attract predators.

In summary, the roaded condition of caribou habitat on the IPNF contributes to predation risk for caribou in action area. The effects of these roads on predation risk are at least partially offset by the provisions of the existing plan that limit timber harvest and other vegetation management activities in caribou habitat and may be further moderated by hunter access that controls predator populations.

There are no roads in caribou critical habitat and there has not been timber harvest in critical habitat in the recent past. Thus, the baseline condition of critical habitat as it relates to roads and timber harvest is not contributing to predation risk.

Human Access

Controlling and/or managing motorized access may improve Selkirk caribou distribution and habitat use within the recovery zone by reducing the risk of disturbance, displacement, and mortality. Outdoor recreation is the fastest growing use on NFS lands and it is a use that is expected to increase in the future. Since the 1980, both motorized and non-motorized recreation use of the roads, trails, and general forest areas have increased.

There are 166 miles of wheeled motorized access in caribou habitat and an additional 25 miles occur in non-habitat in the recovery area (Table V -7). The majority of the woodland caribou habitat on the IPNF (i.e. 96 percent) is also within the Selkirk grizzly bear recovery zone and caribou are thus afforded the security provided for bears in this recovery area. As stated above, wheeled motorized vehicle access management strategies for grizzly bear have created 55,400

acres of secure habitat (i.e. devoid of wheeled motorized routes) within the caribou recovery zone. Moreover, grizzly bear secure habitat (core area) is restricted from ground-based commercial timber harvest during the active bear year (April 1 through November 15) during the minimum 10-year life of core designation; hence, noise and disturbance generated by timber harvest activities is also avoided in these areas during this time period.

There are no roads in Selkirk caribou designated critical habitat. However, motorized routes do provide access to non-motorized trailheads in the Selkirks, with hiking trails constructed/maintained to 90 percent of the high elevation lakes, meadows and basins. High elevation basins that include meadows and riparian areas are preferred habitat by woodland caribou. Such areas are often snow-free earlier in the season, provide good visibility, and include an abundance of arboreal lichen, grasses, and forbs. This makes them ideal habitat for caribou in general, and especially caribou cows with calves. These areas also provide some of the most popular recreation destinations for backpacking, hiking, and camping from July through October, with significantly increasing human use observed over the last two decades due to publicity from local advertisement and guide books. Hence, risk of displacement, or increased susceptibility to predation by pushing caribou into areas of reduced visibility, is a concern for the action area.

Table V-7 shows the current availability of snowmobiling in caribou recovery area. Beginning in 1993, the IPNF implemented site-specific closures to protect caribou on the Forest. In 2007, a protective winter closure order (Court Order NO. CV-05-0248-RHW) was put in place within and around the recovery area and is considered in the current environmental baseline for the project. Under these closures, approximately 239,588 acres are closed to off-route snowmobile use. Within these 239,588 acres, the closure dates are variable, but the majority of lands are closed from November 20 through June 30. To be clear, the protective closure restricted off-route snowmobiling in the area subject to the closure. However, within the closure area, snowmobiling is allowed on some existing roads. Under baseline conditions, in the action area, snowmobiling occurs on 30 miles of groomed or designated routes within the caribou recovery area (Table V-7). Additionally, off-route snowmobiling is allowed on 23,311 acres within the caribou recovery area though not all acres may be accessible to snowmobiles Table V-7. Hence, the existing protective closure provides limited reduction in the risk that snowmobile trails are facilitating predator access into caribou habitat. The existing closure order limits motorized over-snow vehicle access within NFS lands until a Winter Recreation Strategy is completed under the Revised Plan sometime in 2014 to 2015 (USFS 2013a, p. 116). Therefore, the closure order is considered the baseline condition at this time. There are no groomed routes, designated over-snow routes, or use areas located in designated critical habitat.

Special use authorizations permit occupancy and use on NFS lands by federal, state and local agencies, private industry, and individuals. Recreation special use permits are of particular interest in evaluating effects to caribou due to their proximity to caribou habitat and their potential to generate some level of disturbance or displacement. The IPNF currently has 190 recreation Special Use Permits and agreements (USFS 2011b, page 289). This includes two resorts that operate in the Priest Lake area and have winter-time operations on NFS lands in the action area. There are seven Challenge Cost-share agreements that permit winter grooming of snowmobile trails on the IPNF, and two of these are located in woodland caribou habitat.

Outfitter and Guides also operate on NFS lands under special use permits. Two outfitter and guides operate within the woodland caribou recovery area on the IPNF, and both are allowed to use snowmobiles as part of their permit. None of these are located in critical habitat.

Livestock Grazing

Both Selkirk caribou and domestic cattle are primarily grazers, which in theory, presents the possibility of forage competition and the introduction of noxious weeds into caribou habitat (USFS 2013a, p. 130). In 1979, there were 73 allotments on the IPNF with the majority of forage produced on 7,500 acres of meadow and permanent grasslands. The existing plan permitted livestock use to be 6,700 AUMs. However, cattle grazing AUM's are declining on the Forest, with an average of only 3,086 AUMs from 1996 through 2009. This decline can be attributed to the change in suitability of transitory range (secondary timbered lands that provide temporary rangelands that are eventually timbered through regrowth of trees), changing patterns of private lands use, and rising industry costs that make small allotments uneconomical. Today, there are only 14 allotments on the Forest with a total of 2,375 AUMs. The number of allotments and number of AUMs is expected to remain the same over the next 10-15 years (USFS 2011b, p.443).

There are two cattle grazing allotments that incorporate 14,295 acres of caribou habitat situated in the Grass and Cow CMUs, which represents approximately 6 percent of caribou habitat (including forested and non-forested habitat) within the recovery zone. There are no grazing allotments in critical habitat. At this time, we have no information that would cause us to consider the current levels of grazing on the IPNF to be a significant threat to caribou.

Mineral Extraction

Mineral extraction includes: 1) the location and extraction of mineral materials (e.g., sand, gravel, rock), 2) the location and extraction of locatable minerals (e.g. gold, silver, copper), and 3) mineral leasing for oil, gas, coal, geothermal resources, potassium, sodium, phosphates, oil shale, and sulfur, which includes exploration and surface occupancy (extraction). The actions associated with mineral extraction in the action area could potentially result in habitat loss or displace caribou (USFS 2013a, p. 128) or contribute to habitat fragmentation through construction of new roads that are subsequently used for recreational access.

There are no major mining operations on the IPNF at this time. There are currently 1,232 Plans of Operations for locatable minerals on the IPNF. Of these, three are located in cedar/hemlock habitat types in the Selkirk caribou recovery area. The majority of on-going activities are related to maintenance of existing facilities. Most locatable mineral operations are less than five acres in size. Potential for future mineral discovery is considered "low."

There are approximately 434 active mineral material pits and quarries within the IPNF and of these two sites are located in the caribou recovery area. Sites are typically from less than one acre to five acres in size. Neither is located in critical habitat.

There are no leasable minerals located on the IPNF at this time and potential is considered "low".

In summary, mineral extraction on the Forest is not a threat to caribou or caribou habitat at this time.

D. EFFECTS OF THE ACTION

The effects of the action are considered along with the status of the species, the environmental baseline, and cumulative effects (defined below) for purposes of preparing a biological opinion on a proposed Federal action (USFWS and NMFS 1998).

"Effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, and that will be added to the environmental baseline. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. [50 CFR §402.02]

1. Factors to be Considered

This section considers the effects to Selkirk caribou from implementation of the Revised Plan direction as guided by the Revised Plan elements (goals, objectives, desired condition, standards, and guidelines). This analysis also addresses how the specific elements for the conservation of caribou and caribou habitat moderate the effects of the Revised Plan. The Revised Plan also implements the previously consulted-on Grizzly Bear Access Amendment and NRLMD. The effects of these programs on caribou are also considered.

This biological opinion does not provide an analysis for effects of specific actions. Rather, the analysis is a broad-scale examination of the types of projects and activities conducted under the Revised Plan that could potentially occur in caribou habitat and result in effects on Selkirk caribou. Because of the broad-scale analysis, the IPNF is responsible for section 7 consultation on all future projects (conducted under the Revised Plan) that may affect the Selkirk caribou or its habitat, even if those projects are consistent with Revised Plan.

Our analysis will be used to determine the potential for the Revised Plan direction to jeopardize the affected population of Selkirk caribou. In our analysis of effects of the Revised Plan, we will discuss the effects of the Revised Plan and application of the elements in the MAs relative to CMUs and recovery areas, which are the units of analysis commonly used to describe effects on caribou (see Section A.1).

2. Analysis of Effects of the Action

The following sections analyze the direct and indirect effects of implementing elements of the Revised Plan on caribou. The effects will be discussed by broad categories of risk factors as identified in Section B.7 and in the USFS BA (2013a) for the action area. The effects of the Revised Plan are discussed under the following, often overlapping, categories:

- **Habitat alteration** including vegetation management, fire management, and connectivity/travel corridors.
- **Motorized and human access** including road construction or reconstruction, dispersed nonwinter recreation, and winter recreation.
- **Other Actions** including livestock grazing, mining, and collection of forest products.

For each category of effect, we begin with a general summary of what the science currently tells us about the potential impacts on caribou and caribou habitat. This is followed by an analysis of the specific effects of the proposed action on caribou and caribou habitat.

Effects of Habitat Alteration on Caribou Under the Revised Plan

This section addresses the effects of vegetation management, fire management, and habitat fragmentation on caribou under the Revised Plan.

Effects of Vegetation Management on Caribou Under the Revised Plan

Vegetation management includes timber harvest, salvage harvest, planting, thinning, and fuels management.

General Effects of Vegetation Management on Caribou

The Selkirk caribou population is closely tied to older coniferous forests in B.C. and the U.S. and their predator avoidance strategy depends on their ability to spread out across large areas of suitable habitat where it is difficult for predators to find them. Consequently, vegetation management activities (specifically, timber harvest, thinning and fuels management) that result in the removal of older subalpine fir and/or cedar-hemlock stands within the recovery area are a concern. Additionally, vegetation management activities, including planting, that increases human presence and use of motorized equipment in caribou habitat can result in disturbance to caribou causing them to at least temporarily avoid the area.

Timber harvest activities in woodland caribou habitat can also: 1) reduce the amount of useable space available for caribou, limiting the ecological carrying capacity of the habitat for the caribou; 2) reduce arboreal lichens, the caribou's key winter food source; 3) fragment habitat thereby altering caribou elevational migration and habitat use patterns; and 4) increase predation risk where security cover has been removed or modified (Cichowski et al. 2004).

Given the caribou's requirement for extensive stands of mature and old-growth forest, vegetation management activities can – depending on the scope and magnitude - result in long-term adverse

effects to caribou because of the length of time required for the habitat to regain old-growth characteristics. Timber harvest can destroy or damage arboreal lichens. Since lichen regeneration is slow, this effect can have long-term implications on caribou late winter habitat. However, caribou require a supply of lichens across the landscape to allow for rotation of winter ranges. Therefore, effects to the lichen supply can have cumulative, long-term impacts by forcing caribou to focus their foraging efforts in restricted portions of their range, thereby depleting lichen reserves (Cichowski et al. 2004).

At a landscape scale, vegetation management may fragment caribou habitat, resulting in adverse effects on caribou through the creation of a patchwork of early seral and mature forest, which can have several different effects on caribou. Fragmented habitat can lead to caribou avoidance or abandonment of the area. Such forest structure may also enhance the habitat for other ungulates such as moose, white-tailed deer, and elk, which can lead to increased predator numbers and, in turn, increased predation on caribou. The distribution of both summer and winter habitat on the landscape and the ability of caribou to remain spatially separated from potential predators are essential to caribou's predator avoidance strategy. Fragmented habitat linked by a network of roads may contain sufficient forage to support a caribou population, but does not provide an environment where caribou can effectively avoid predators (Cichowski et al. 2004).

Effects of Vegetation Management on Caribou in the Action Area

The primary concerns from vegetation management in the action area include effects on mature/ old-growth/late-successional habitat, effects from fragmentation/connectivity, and risk of increased predation.

Mature/Old Growth/Late-successional Habitat

No caribou habitat is within the lands identified under the Revised Plan as suitable for timber production – that is, the land base used for determining allowable sale quantity and vegetation management for timber production. As shown in Table V -8, no stands of timber in caribou habitat are targeted for commercial timber production (stands targeted to provide commercial timber products on a regulated basis with planned, scheduled entries). The Proposed Action reduces the number of acres of where timber harvest is allowed in the recovery area by approximately 5,574 acres (Table V -8). This means that approximately 63 percent of the caribou recovery area could be subject to timber harvest under the Revised Plan. However, timber stands in caribou habitat could be subject to timber harvest when opportunities for wood fiber utilization and other multiple-use purposes, including resource benefits and fuels management arise.

Although timber harvest in caribou habitat is allowed to be proposed under the Revised Plan, both the likelihood of timber harvest as well as potential adverse effects on caribou from vegetation management in caribou habitat would be reduced by the Revised Plan elements. All vegetation management proposals on the IPNF would be considered in terms of Forest-wide desired conditions to recover threatened and endangered species (FW-DC-WL-03); to limit disturbance in listed species habitat (FW-DC-WL-01, 04, and 05); to support old-growth habitat

and associated species (FW-DC-WL-12), and to promote a forest-wide system of large, remote areas with low levels of disturbance so that caribou have the necessary space and habitat unhampered by human activities (FW-DC-WL-02 and 07, MA1a,b,c,e-DC-WL-01, MA3-DC-WL-01, MA5-DC-WL-01, GA-DC-WL-PR-02 and 04, GA-DC-WL-LK-03, and GA-DC-WL-PO-02 and 03).

The desired conditions are achieved through implementation of project-level guidelines and standards for caribou, grizzly bears, and lynx. These measures would further reduce both the likelihood of timber harvest as well as potential adverse effects on caribou from vegetation management in caribou habitat. Specifically, guideline FW-GDL-VEG-01 and standard FW-STD-VEG-01 both limit the circumstances under which timber harvest may occur in old-growth habitat; FW-GDL-VEG-02 generally avoids road construction or other developments in old growth stands unless access is needed to implement vegetation management activities for the purpose of increasing the resistance and/or resilience of the stands to disturbances; and caribou guideline FW-GDL-WL-02 states that management activities in seasonal caribou habitat should trend vegetation toward target stand condition. Exceptions may occur when using fire to emulate natural disturbance patterns to benefit other listed species or for the long term maintenance of caribou habitat. These measures reduce the likelihood of vegetation management in caribou habitat and reduce the likelihood of adverse effects when projects are proposed in caribou habitat by: retaining the characteristics of old-growth stands; reducing the likelihood of creating early seral stage stands which attract other ungulate species and associated predators; and reducing the risk of fragmentation of stands from roads. Notably, the Forest states that in the previous 20

Table V-8. Acres of woodland caribou habitat by allowable uses under existing Forest Plan versus the Revised Plan. The magnitude of *actual* use and activity is regulated by the 2007 NRLMD standards and guidelines in regards to vegetation management and the 2011 Access Amendment design criteria in regards to motorized access (USFS 2011c) as well as other management direction and available budgets.

Allowable Uses Under Forest Plan Management Area Direction	Existing Forest Plan					Proposed Action				
	Woodland Caribou Habitat				Non-Habitat	Woodland Caribou Habitat				Non-Habitat
	SAF Habitat	CH/ Other Habitat	Non-Forested Habitat[1]	Critical Habitat		SAF Habitat	CH/ Other Habitat	Non-Forested Habitat[1]	Critical Habitat	
	(Acres)					(Acres)				
Timber Harvest	67,101 (66)	81,679 (79)	NA	155 (2)	16,860 (82)	68,491 (67)	75,970 (74)	NA	0	15,760 (76)
Timber Production	27,522 (27)	67,127 (65)	NA	0	11,663 (57)	0	0	0	0	0
Commercial Use – Special Forest Products & Firewood	102,105 (100)	102,993 (100)	21,612 (100)	8,501 (100)	20,626 (100)	68,465 (67)	75,970 (74)	11,624 (54)	0	20,624 (100)
Personal Use – Special Forest Products & Firewood	102,105 (100)	102,993 (100)	21,612 (100)	8,501 (100)	20,626 (100)	102,106 (100)	102,993 (100)	21,612 (100)	7,656	20,624 (100)
Planned Fire Ignition	101,759 (99)	102,380 (99)	21,612 (100)	8,501 (100)	20,626 (100)	102,106 (100)	102,993 (100)	21,612 (100)	8,501	20,624 (100)
Natural, Unplanned Fire (to meet resource objectives)	19,639 (19)	15,835 (15)	9,204 (43)	8,191 (96)	2,287 (11)	102,106 (100)	102,993 (100)	21,612 (100)	8,501	20,624 (100)
Grazing	82,466[2] (81)	87,158[2] (85)	12,408 (12)	0	18,333 (89)	68,465 (67)	75,970 (74)	11,624 (54)	0	15,760 (76)
Wheeled Motor Vehicle	81,322 (80)	93,795 (91)	17,911 (83)	8,501 (100)	19,626 (95)	68,465 (67)	75,970 (74)	11,624 (54)	0	15,760 (76)
Over-the-snow Motorized	81,322 (80)	93,795 (91)	17,911 (83)	8,501 (100)	19,626 (95)	68,465 (67)	75,970 (74)	11,624 (54)	0	15,760 (76)
Road Construction (permanent or temporary)	61,115 (60)	87,228 (85)	12,406 (57)	0	16,060[4] (78)	42,803 (42)	57,203 (56)	5,420 (25)	0	11,423 (55)
Minerals – Leasable	26,134 (26)	12,678 (12)	7,756 (36)	0	4,871 (24)	99,512 (98)	98,696 (96)	21,274 (98)	5,923	20,346 (99)
Minerals - Materials	83,427 (82)	96,501 (94)	18,309 (85)	8,501 (100)	18,503 (90)	27,784 (27)	52,337 (51)	3,399 (19)	0	9,957 (48)

[1]Includes all acres on NFS lands within the recovery area such as high elevation non-forested areas, meadows, and rock/scree areas.

[2]No increase in livestock operations is allowed in MA 2 and MA3 under the existing Forest Plan direction for grizzly bears. This includes another 71 acres of SAF and 5,518 acres of CH/Other.

years there have been essentially no changes to caribou habitat on the IPNF as a result of timber harvest (USFS 2013a, p. 121)[7].

About 96 percent of the IPNF recovery area overlaps with grizzly bear BMUs where the Grizzly Bear Access Amendment is applied (USFS 2013a, p.118). The grizzly bear Access Amendment (FW-STD-WL-02) generally moderates the miles of road in grizzly bear habitat and provides large blocks of habitat where motorized use of roads and trails is prohibited. Secure habitat in these areas is maintained for a period of 10 years. Ground-based timber harvest is limited to the grizzly bear denning period (November 15 through April 1) in core areas in the IPNF during the 10-year period it is in place. While helicopter harvest is allowed year-round, harvest would be opportunistic (as explained above) as the core areas are not within areas identified as suitable for timber production. The Access Amendment also indirectly limits the amount of grizzly bear habitat in some BMUs (and caribou habitat where they overlap) affected by vegetation management activities during the active bear year that generate noise and other disturbance by limiting the road access needed for these activities.

Lastly, the likelihood of reductions or alterations of caribou habitat would be further reduced by Revised Plan adherence to the NRLMD (FW-STD-WL-01), which limits the extent of harvest in mature, multi-story stands in lynx habitat in LAUs. The NRLMD also limits the percentage of the LAU that can be converted to an early stand initiation structural stage by decade, again benefiting caribou where caribou habitat overlaps with lynx habitat in an LAU. The Forest reports that 58 percent of IPNF recovery area overlaps with LAUs (USFS 2013a, p. 118).

Combined, the existing trend for limited timber harvest in caribou habitat (the IPNF has treated less than 5,400 acres of caribou habitat since 1987); the reduction in acres of caribou habitat subject to vegetation management (Table V -8); the Revised Plan desired conditions, guidelines, and standards pertaining to wildlife and vegetation management; implementation of the Grizzly Bear Access Amendment and NRLMD; and guidelines applied at the project level all greatly reduce the likelihood that vegetation management would occur in caribou habitat. However, while these measures constrain vegetation management in caribou habitat, they do not prohibit it from occurring; approximately 63 percent of caribou habitat is available to be proposed for harvest under the Revised Plan. While the conservation measures for caribou, grizzly bear, and lynx ameliorate to a great extent the potential for, or extent of, adverse effects on caribou when harvest of caribou habitat is planned, they do not alleviate them. Therefore, individual caribou using habitat in the U.S. within the action area could be adversely affected through vegetation management activities implemented in accordance with the Revised Plan However, we do not anticipate that adverse effects to individual caribou will translate to adverse effects to the Selkirk caribou population as a whole for the following reasons: 1) habitat is not considered to be limiting the growth of this population at this time (MCTAC 2002 and USFWS 2008a, p. 21); 2) this population appears to be primarily dependent upon the availability of habitat in B.C. (77 FR

[7] Since 1987, there is been less than 5,400 acres of timber harvest on the IPNF in caribou habitat and these treatments were designed to move unsuitable habitat conditions towards suitable habitat (USFS 2013a, p. 121).

71064); 3) approximately 418,000 acres of caribou habitat in B.C. Canada are protected from harvest (77 FR 71066); and 4) when harvest of old-growth caribou habitat is proposed on the IPNF, the management objective will be to improve resiliency of the stand.

Fire-related salvage harvest (and associated planting) is not expected to result in adverse effects to caribou since caribou would likely be displaced from the area due the fire disturbance itself. Salvage harvest in response to insect or disease outbreaks would result in effects similar to those described above. Since excessive deadfall in forested stands may impede travel by caribou (Metsaranta et al. 2003) salvage harvest may benefit caribou in some cases. Snags tend to support higher densities of lichens, so retention of snags during salvage harvest in caribou habitat is an important consideration.

Forest-wide desired condition (FW-DC-FIRE-02) expresses the need to reduce hazardous fuels within the wildland-urban interface (WUI) as well as other areas where values are at risk. On the IPNF, there are 29,711 acres of caribou habitat in the Bonners Ferry and Sandpoint WUI. This is 13 percent of all caribou habitat on the Forest. It is expected that some of this habitat also occurs within lynx habitat in an LAU (Allen 06/06/2013 pers. comm.). Under the NRLMD, timber harvest is limited such that just 6 percent of all lynx habitat in the WUI may be treated for fuels management. This measure would similarly limit fuels management in caribou habitat where it overlaps lynx habitat in an LAU. While suitable habitat for caribou may occur in these areas, because the WUI occurs in proximity to communities and other human developments, we expect it is mostly avoided by caribou, which are highly sensitive to human presence. We are also less concerned about providing habitat for caribou in these areas due to the increased risk of disturbance, displacement, predation or possibly poaching. Therefore, we do not expect that fuels management in the WUI would result in adverse effects on caribou to the extent of impairment of the ability to feed, breed, or shelter.

Fragmentation/Connectivity

Based on the limited extent of vegetation management and fires that have occurred in caribou habitat under the existing plan, (since 1987, less than 8,000 acres of caribou habitat have been affected by stand-replacing fires and less than 5,000 acres have been subject to timber harvest), current timber and fire management practices are not contributing to fragmentation of caribou habitat in the action area.

The Forest reports that desired conditions for vegetation (FW-DC-VEG-01 through 08, and 11) are based on historical conditions and natural disturbance processes, so that under the Revised Plan, woodland caribou would have approximately the types and amounts of habitats they would have had historically under natural disturbance processes (USFS 2013a, p.134). The amounts and distribution of seasonal habitats, cover, opening size, forage, and the vegetative components of connectivity under the desired conditions would be similar to what woodland caribou evolved with on the IPNF and would be more resilient to large-scale disturbances (ibid). The Service recognizes that these conditions would take some time to develop, but supports the Revised Plan direction for desired conditions based on historical conditions and natural disturbance processes. Existing levels of fragmentation attributed to roads would continue under the Revised Plan, but is partially offset by the Access Amendment (FW-STD-WL-02), which reduces or maintains

moderate densities of open and total roads and provides large blocks of secure habitat where motorized use of roads and trails is prohibited.

Under the Revised Plan, we do not anticipate landscape-scale effects to caribou habitat connectivity or travel corridors within the action area and between the action area and Canada as a result of vegetation management activities. However, the Revised Plan does allow the design and implementation of projects that could contribute to, or result in, additional limited fragmentation within patches of caribou habitat that could have effects to individual caribou. The potential for the design of projects having adverse effects to caribou is limited by the following factors:

- The conditions under which timber harvest could occur in caribou habitat are limited and when planned in old-growth caribou habitat, the overall objective will be to improve resiliency of the stand.
- The acres where road construction/reconstruction can occur within the caribou recovery area would be reduced by approximately 59,960 acres.
- The Grizzly Bear Access Amendment generally moderates the miles of road in grizzly bear habitat and provides large blocks of habitat where motorized use of roads and trails is prohibited during the active bear year from April 1 through November 15. This area overlaps with 96 percent of the caribou recovery area and has created approximately 55,400 acres of secure habitat (i.e. devoid of wheeled-motorized use) within the caribou recovery area on NFS lands from the mid-1980s to 2009 (ibid).
- Fifty-eight percent of the caribou recovery area on the IPNF overlaps with LAUs where the extent of harvest in mature, multi-story stands in lynx habitat and rate of conversion of stands to early, seral stages is greatly limited.
- Revised Plan guidelines would: 1) limit timber harvest in old-growth stands to those that are designed to increase the resistance and/or resiliency of the stand to disturbances, while meeting the minimum old-growth criteria (FW-GDL-VEG-01); 2) generally avoid road construction in old-growth stands (FW-GDL-VEG-02); and 3) states that management activities in seasonal caribou habitat should trend vegetation toward target stand condition (FW-GDL-WL-02-exceptions may occur).

Overall, Revised Plan desired conditions, MA direction, and project-level standards and guidelines would work together to maintain the habitat conditions needed for caribou habitat and for elevational movements to access seasonal habitats on the IPNF and between IPNF and Canada. Nevertheless, the Revised Plan allows timber harvest in caribou habitat, and therefore, adverse effects on individual caribou may occur under the Revised Plan. However, given the constraints imposed upon vegetation management activities within old-growth caribou habitat (through implementation of management standards and guidelines for caribou, grizzly bears, and lynx) we do not expect that such adverse effects stemming from implementation of projects would occur at a scale where caribou movement would be adversely impeded or population connectivity would be adversely affected. Adverse fragmentation effects to caribou are most likely to occur through road construction within old-growth stands of caribou habitat. As stated previously, predators of caribou (e.g., wolves) use linear features on the landscape (e.g., roads) for movement, which can increase the vulnerability of caribou to predation. Potential predation effects upon caribou are discussed below.

Predation

Vegetation management that fragments habitat can contribute to increased predation pressure on caribou. An increase in early-seral stands attracts other ungulates (deer, elk, and moose), which can, in turn, attract or lead to an expansion of predators into caribou habitat where they opportunistically prey on caribou along with the other ungulates. Further, limiting caribou to old-growth habitat patches (as opposed to large-scale stands) may increase the search efficiency of predators. Lastly, roads needed for timber-harvesting activities facilitate the movement of predators, such as wolves and cougars, into the caribou's range (Apps et al. 2013, pp.1, 9). However, some roads may facilitate hunter access, which can help moderate predator populations (Apps et al. 2013, pp. 9; Hayden et al. 2007; Hayden and L. Allen 08/21/2013 pers. comm.)

These potential effects can be reduced by limiting vegetation management activities and associated road construction in caribou habitat, and by retaining connectivity within and between caribou habitat when planning management activities. As discussed above for old-growth habitat and fragmentation/connectivity, the Revised Plan reduces the acres of the caribou recovery area where timber harvest and road construction are allowed to be proposed (Table V -8 and FW-STD-WL-02) and limits opportunities for vegetation management in old-growth stands (FW-GDL-WL-02, and FW-GDL-WL-01 and 02 and FW-STD-WL-01). The recent trend has been for limited acres of treatment in caribou habitat on the IPNF (5,000 acres since 1987). Additionally, vegetation standard FW-STD-VEG-01 restricts timber harvest or other vegetation management activities in old-growth that would likely modify the characteristics of the stand to the extent that the stand would no longer meet the minimum old-growth criteria.

Given these constraints, we do not anticipate implementation of projects that would fragment (e.g., reduce patch size) old-growth caribou habitat on the IPNF, which could further limit and concentrate caribou into smaller habitat patches, potentially making them more susceptible to predation.

As discussed above, the Revised Plan does allow road construction to be proposed in old-growth caribou habitat for the purpose of implementing vegetation management projects. Roads can facilitate predator (e.g., wolves, mountain lions) access into caribou habitat, which could increase opportunistic encounters between caribou and predators. Future proposals to construct roads in accordance with the Revised Plan would be constrained, and likely to occur in very limited circumstances within caribou habitat due to Revised Plan elements pertaining to habitat management for caribou, grizzly bears, and lynx. Nonetheless, roads could be constructed within caribou habitat. Given the most recent census data, which indicate the population size of the Selkirk caribou is now 27 animals in both the U.S. and Canada, any indirect effect of increased predation upon caribou could be a significant stressor on the population and would be extremely concerning. However, project level section 7 consultations would occur for all future proposed projects implemented in accordance with the Revised Plan. The results of such consultations will depend on the specific considerations at that time, including population status and resiliency, and the best available scientific and commercial data. Future project-level consultations that conclude potential adverse effects and incidental take are very likely to require additional considerations beyond those required under the Revised Plan for caribou, grizzly

bears, and lynx. Depending on the aggregate effects identified in future consultations, additional considerations could include reasonable and prudent measures and terms and conditions, in accordance with section 7 policy and implementing regulations (50 CFR 402.14).

Effects of Fire Management on Caribou Under the Revised Plan

Fire management includes fire suppression, wildland fire use, and prescribed fire. Fuels management is addressed above under Vegetation Management.

General Effects of Fire Management on Caribou

Natural fire often stimulates the understory and/or increases the vegetative diversity of habitat in the long-term and helps maintain the mosaic of landscape conditions that provide the diversity of habitats required by caribou. The exception would be fires in high elevation, old-growth stands that reduce the availability of lichen. However, these fires occur infrequently on the landscape. The short-term effects of fires in caribou habitat include temporary displacement, increased stress, and potentially reduced foraging habitat. Fire suppression alters the natural development of forests and species composition, and can render forests susceptible to large-scale disturbance due to increased fuels and denser stands. Lands affected by higher intensity stand-replacing fires may also require longer recovery or may even require active management to restore.

The use of prescribed fire and the occurrence of wildfires in forested ecosystems have the potential to affect Selkirk caribou through a number of mechanisms. At the site-specific scale, fire may alter the vegetation composition and abundance within caribou habitat, including arboreal lichens, the primary food source for caribou through the winter months. Fires can also fragment the landscape or reduce the extent of old-growth stands. Caribou habitat that has burned in wildfire experiences a short-term reduction in suitability where arboreal lichens have burned or are less accessible due to increased snow accumulations where crown cover has burned (Metsaranta et al. 2003). Fire can also contribute to increased deadfall in forested stands, which in excessive amounts may impede travel by caribou (ibid). Although fire might create early seral stage stands that attract deer and moose (and subsequently predators), considering longer time frames, fire appears to stimulate forage growth, particularly in the 40 years following a fire event; and this may result in improved habitat conditions for caribou in the long term. Fire management activities (suppression or prescribed fires) may also cause short-term disturbance or displacement impacts to caribou through presence of humans and use of motorized equipment. In the longer term, prescribed fire, in combination with mechanical treatments, might assist in protecting and/or restoring caribou habitat with the understanding that short-term impacts to forage availability may occur (USFWS 2008b, p. 97).

Wildfires are a natural phenomenon within the range of woodland caribou, but due to present circumstances and vegetation patterns (many created by anthropomorphic effects), wildfires are often considered a threat to caribou habitat. Historically, caribou may have been able to better tolerate the natural adverse impact of wildfire because there were more favorable patterns of old growth forest available for displaced caribou to occupy. However, the cumulative effects of logging, road building, and wildfires have eliminated a significant amount of historic caribou habitat to the extent that at a landscape scale, stand-replacing fire is more likely to change the

configuration and availability of caribou-occupied forested stands in a manner that reduces the cover and the security that these stands provide to caribou from predators, human disturbance, and extreme weather conditions (Courtois et al. 2007, Shepherd et al. 2007). Due primarily to these human-induced changes on the landscape, impacts of wildfire on caribou habitat were identified as a concern in the 1994 Recovery Plan for the species. To avoid such impacts, the judicious use of planned ignitions and the management of unplanned ignitions - to the extent possible, while providing for firefighter safety - would assist in protecting and/or restoring caribou habitat in the long-term with the understanding that short-term impacts to forage availability may occur.

Effects of Fire Management in the Action Area

Fire Suppression. Fire exclusion has altered the pattern and composition of vegetation within National Forests in Idaho (Hillis 2003, cited in USFS 2013a). This effect has been most pronounced within vegetation communities that have fire regimes that are of low intensity or of mixed severity. Many of these are drier community types and are not considered caribou habitat. Generally, on a forest-wide or regional (western) basis, spruce-fir habitats appear to have been little- or less-affected by fire suppression because the fire regimes within this habitat type tend to be high intensity, stand replacing events occurring at low frequencies (i.e. every 100 years or more) (Agee 2000 as cited *In* USFWS 2007, p. 11). However, with respect to the caribou recovery zone, as described under the "Factors Affecting the Status of Caribou and the Condition of Caribou Critical Habitat in the Action Area," much of the recovery area was burned to early successional stages by fires by 1880. Today, 61 percent of the forested caribou habitat on the IPNF is 100 years or older. Of this percentage, 38.5 percent of forested stands are greater than 100 years old and 22.5 percent are 150 years or older (Table V -6).

The Revised Plan incorporates design elements to address the issue of an altered forested landscape. Desired condition elements (FW-DC-VEG-01 through 06, 08, and 11, and FW-DC-FIRE-03) will trend vegetation towards historical conditions creating habitats that are more resilient to large-scale disturbance (USFS 2013a, p. 126). Geographic area desired conditions (GA-DC-VEG-LK-01, GA-DC-VEG-LK-02, and GA-DC-VEG-PR-02) will also help restore habitats and increase resiliency including, trending specific areas towards desired vegetative conditions. Increasing stand resiliency across the Forest may also reduce the risk of fires starting in adjacent habitats and moving into caribou habitat.

The Revised Plan includes more flexibility to use unplanned natural ignitions to meet resource objectives compared to the existing plan. The acres of caribou habitat where natural ignitions will be allowed will increase from approximately 46,965 acres to 200,370 acres (Table V -8). In approximately 29 percent of caribou habitat in MA1 (wilderness, recommended wilderness, wilderness study areas, and primitive lands) wildfire would be the primary tool for trending vegetation toward desired conditions (MA1a,b-DC-FIRE-01). In an additional 32 percent of caribou habitat in MA5 (backcountry), use of fire (both planned and unplanned ignitions) would be the primary tool for trending vegetation toward desired conditions (MA5-DC-FIRE-01). The Revised Plan emphasizes the use of fire to trend vegetation towards the desired condition (FW-DC-FIRE-03; MA1abce-DC-VEG-01, MA1abc-DC-FIRE-01, MA1abce-GDL-FIRE-01 and 02, MA2a-DC-FIRE-01, MA2a-DC-VEG-01, MA2b-DC-FIRE-01, MA2b-DC-VEG-01, MA2ab-

GDL-FIRE-01 through 03, MA5-DC-VEG-01, MA5-DC-FIRE-01, MA5-GDL-FIRE-01and MA6-GDL-FIRE-01). Therefore, we expect that fire suppression will occur in more limited circumstances. However, undesirable wildfires will continue to be suppressed where necessary to protect life, property, and key resources (FW-DC-FIRE-03). While we support the use of fire for trending vegetation towards desired conditions, large-scale fires in caribou habitat could result in substantial adverse effects on caribou such as loss of habitat, increased fragmentation, and resulting alteration of predator-prey relationships (see Section B.4. Factors Affecting the Status of the Species).

Many of the acres of caribou habitat that were burned by wildfires in the late 1800s and early 1900s have regrown and now provide certain seasonal caribou habitat components (e.g., spring, calving, summer). Much of this habitat is still on its way to developing structural characteristics capable of providing sufficient lichen loading to support the winter foraging needs of caribou, but notably, 22.5 percent of forested caribou habitat in the action area is 150 years or older (the age at which it typically has developed the attributes to support appreciable lichen loading for caribou winter habitat). Certainly, acres that were burned by wildlife in the 1960s and later (8 percent of forested caribou habitat) are currently not providing vegetative characteristics suitable for the needs of caribou.

We expect the likelihood of large-scale, stand-replacing fires that substantially reduce caribou habitat on the IPNF in the recovery area to be low. Such fires tend to occur at low frequencies (every 100+ years in spruce-fir habitat and every 200-300 years in cedar-hemlock habitat). Further, the Revised Plan desired condition for vegetation, as described above, would trend vegetation towards historical conditions creating habitats that are more resilient to large-scale disturbance (USFS 2013a, p. 126). Lastly, whether a fire is planned or unplanned, the IPNF would still be making decisions about which fires to allow to burn and which fires to suppress. Hence, we expect that desired conditions FW-DC-FIRE-03 and FW-DC-WL-03 will be given due consideration by the IPNF when making decisions about which fires to allow to burn and which fires to suppress. Further, pursuant to emergency consultation procedures (50 CFR 402.05), the IPNF will coordinate with the Service to incorporate reasonable measures, as appropriate, to minimize effects of the emergency response action upon listed species and critical habitat.

Fire suppression activities in caribou habitat have the potential to affect caribou. However, we do not anticipate adverse displacement effects on caribou much beyond those that would occur when caribou would leave an area on their own, in advance of an approaching fire; or avoid an area after suitable habitat is burned over.

Prescribed Fires. Most prescribed burning in the Selkirk caribou recovery area has been associated with post-harvest treatments, although as stated previously, the IPNF has burned approximately 640 acres within CMUs to promote big game winter range improvement and whitebark pine restoration (USFS 2013a, p. 122). However, while big game winter range may be contained within the boundaries of CMUs, it typically does not provide suitable caribou habitat (because it is lower in elevation). On the other hand, whitebark pine habitats within CMUs do provide caribou calving habitat (high elevation ridges and generally sparsely treed), which are used by caribou during the calving season when the areas are under as much as 15 feet

of snow. Therefore, prescribed fire affects to vegetation within whitebark pine habitats are not likely to alter the suitability of whitebark pine habitats to support calving areas for caribou. Even so, assuming all 640 acres were within suitable caribou habitat, and presuming the rate of prescribed burning in caribou habitat under the Revised Plan will be similar to the existing plan, it is unlikely that sufficiently large enough areas of caribou habitat would be burned so as to have adverse effects upon the Selkirk caribou population. Short-term effects to individual Selkirk caribou from prescribed fire could occur where implementation overlaps caribou activity in space and time, and are likely to occur in the form of disturbance, which might result in displacement of caribou. However, we expect implementation of prescribed fire activities under the Revised Plan to result in insignificant effects to individual caribou for the following reasons: 1) the low acreage of caribou habitat likely to be treated with prescribed burning; 2) standard FW-STD-WL-01, which implements the NRLMD, and limits prescribed fire where caribou habitat overlaps lynx habitat through VEG S6; and 3) consideration of Forest-wide desired conditions to recover threatened and endangered species (FW-DC-WL-03), limit disturbance in listed species habitat (FW-DC-WL-01, 04, and 05), support old-growth habitat and associated species (FW-DC-WL-12), and promote a forest-wide system of large, remote areas with low levels of disturbance so that caribou have the necessary space and habitat unhampered by human activities (FW-DC-WL-02 and 07).

Effects of Connectivity/Travel Corridor Management on Caribou Under the Revised Plan

General Effects of Connectivity/Travel Corridor Management on Caribou

Habitat connectivity and travel corridor integrity is affected by timber harvest, prescribed fire, wildfire, roads, and developments in caribou habitat. Ensuring connectivity between existing woodland caribou core use areas in B.C. and suitable habitats in the U.S. is important for maintaining demographic stability, and ultimately achieving the 1994 Recovery Plan goal of having a herd or subpopulation in the U.S. Fragmentation of caribou habitat also reduces the amount of useable space available for caribou, limiting the ecological carrying capacity of the habitat for the caribou. It may also alter caribou elevational migration and habitat use patterns (Cichowski et al. 2004).

Effects of Connectivity/Travel Corridor Management in the Action Area

As described earlier, on the IPNF, since 1987, less than 5,000 acres of caribou habitat have been subject to timber harvest, approximately 640 acres have been affected by prescribed fires, and less than 8,000 acres of caribou habitat have been affected by stand-replacing wildfires. Currently, 61 percent of forested caribou habitat on the IPNF is currently suitable habitat for caribou and remaining acres are in various stages of developing suitable habitat characteristics for caribou.

The Revised Plan allows the proposal of projects that could contribute to or result in limited fragmentation within patches of caribou habitat that could have effects to individual caribou. However, for reasons similar to those discussed above in “Fragmentation/Connectivity” under “Vegetation Management Effects”, we do not anticipate adverse effects to caribou habitat connectivity or travel corridors within the action area and between the action area and Canada. Additionally, Revised Plan desired conditions in MAs and geographic areas also support caribou

habitat connectivity by providing direction for habitat conditions for wildlife movement (MA1a,b,c,d-DC-WL-01, MA5-DC-WL-01, MA3-DC-WL-01) and especially for woodland caribou, throughout the Selkirk recovery zone (GA-DC-WL-PR-01), as well as overall wildlife movement across the Forest and between the Forest and Canada (GA-DC-WL-PO-03 and GA-DC-WL-LK-01).

These factors are in addition to Forest-wide vegetative desired conditions (FW-DC-VEG-01, 02, 03, 04, 05, 06, 08, and 11; FW-DC-FIRE-03; GA-DC-VEG-LK-01, 02; and GA-DC-VEG-PR-02) that are based on historical conditions and natural disturbance processes (USFS 2013c, p. 125). These desired conditions would trend the IPNF towards the amounts and distribution of seasonal habitats, cover, opening size, forage, and the vegetative components of connectivity similar to what woodland caribou evolved with on the IPNF (ibid). Trending towards the desired conditions for vegetation would also create habitats that are more resilient to large-scale disturbance. This would potentially reduce the risk of fires contributing to fragmentation in caribou habitat.

Lastly, the Revised Plan acknowledges the Forest's role in maintaining connectivity through fracture zones, or areas that interrupt movement corridors such as major highways, railroads, high road densities, and human developments (Servheen et al. 2003).

The IPNF can support movement corridors or wildlife crossing structures constructed in association with major roadways by maintaining high quality habitat for wildlife on adjacent lands managed by the Forest. The Revised Plan acknowledges its role by including direction (FW-DC-WL-18), which states that Forest management contributes to wildlife movement within and between national forest parcels; movement between parcels separated by other ownerships is facilitated by management of the NFS portions of linkage areas identified through interagency coordination; and Federal ownership is consolidated at approach areas to highway and road crossings to facilitate wildlife movement. This condition would be achieved through implementation of guidelines FW-GDL-WL-15 through 17. Specifically, these guidelines require that IPNF coordinate with others on the development of crossing structures when major highways are reconstructed, and that they manage lands near future structures to maintain the effectiveness of the structure, and maintain Federal ownership in identified linkage areas.

Overall, we anticipate that the Revised Plan desired conditions for vegetation that trend the Forest towards the amounts and distribution of seasonal habitats, cover, opening size, forage, and the vegetative components of connectivity that caribou evolved with on the IPNF; Forest-wide provisions for connectivity associated with linkages (FW-DC-WL-18 and FW-GDL-WL-15 through 17); Forest-wide wildlife desired conditions and MA and GA direction for wildlife movement; implementation of the NRLMD, which limits the percentage of SISS in lynx habitat in LAUs and prohibits timber harvest in mature, multi-storied stands in lynx habitat in LAUs, and the Grizzly Bear Access Amendment would reduce the risk of fragmentation of caribou habitat and would support connectivity between caribou populations in the action area and Canada. The Revised Plan would maintain connectivity and reduce the risk of fragmentation at the landscape scale such that the caribou's overall ability to access habitats to breed, feed, and shelter would not be significantly impaired at a population or individual level.

Effects of Human Access on Caribou Under the Revised Plan

This section addresses the effects of human access on caribou and caribou habitat via roads and through recreational activities. The effects are described for roads and human access related to dispersed recreation in winter and non-winter months.

General Effects of Roads on Caribou

The effects of wheeled motorized access and roads on caribou as it relates to human access include disturbance and displacement. The effects of roads from habitat fragmentation and predator movements are addressed above. Woodland caribou can be displaced from important habitats like calving grounds (Joly et al. 2006) due to their avoidance of roads (Dyer et al. 2002). Apps and McLellan (2006) found that 'remoteness from human presence, low road densities, and limited motorized access' were important factors in explaining habitat occupancy in current caribou subpopulations.

Effects of Roads on Caribou in the Action Area

Currently, there are approximately 190 miles of road located within the Selkirk caribou recovery area on the IPNF (Table V -7). The Revised Plan does not make changes in existing roads, nor does it identify where future roads will be constructed. Rather, it identifies where roads will be allowed in the future and provides direction on how roads may be managed under the Revised Plan. Most of the existing roads in caribou habitat are located behind gates closed to public use from April 1 through November 15[8] and this trend is expected to continue under the Revised Plan given the allocation of caribou habitat by MA and the elements of the plan that would limit roads in caribou habitat such as the Access Amendment and others as described below. The acres of the caribou recovery area on the IPNF where wheeled motorized access will be allowed is reduced by approximately 37,835 acres such that 68 percent of INPF lands in the recovery area would allow motorized use under the Proposed Action (Table V -8). In addition, allowable road construction/reconstruction is reduced by approximately 59,960 acres in the recovery area on the Forest (Table V -8). This means that 46 percent of the caribou recovery area is available for new road construction.

Forest-wide transportation direction under the Revised Plan, reflects and supports the described reduction in motorized access: "A transportation system is in place that provides safe and efficient public and administrative access to the Forest for recreation, special uses, other forest resource management, and fire management activities….The transportation system and its use have minimal impacts on resources including threatened and endangered species….Unauthorized roads and trails are no longer created." (FW-DC-AR-07).

[8] Almost all of the gates are closed April 1-November 15th for the protection of grizzly bears. Depending on snow conditions and availability of personnel, some gates are opened for public use after November 16th. However, many of these roads have received so little use they are brushed in and un-drivable after a few hundred yards.

Beyond the elements described above and the Forest-wide desired condition for the Forest transportation system, motorized access and road construction in caribou habitat may be further reduced under the Revised Plan. Implementation of the Grizzly Bear Access Amendment (FW-WL-STD-02) moderates the effects of roads by limiting the density of open and total roads allowed on the landscape in grizzly bear BMUs and by maintaining core areas that prohibit wheeled motorized use and mechanized forest management activities requiring use of roads from April 1 through November 15. The Forest-wide desired conditions to recover threatened and endangered species (FW-DC-WL-03); to limit disturbance in listed species habitat (FW-DC-WL-01, 04, and 05); to support old-growth habitat and associated species (FW-DC-WL-12), and to promote a forest-wide system of large, remote areas with low levels of disturbance so that caribou have the necessary space and habitat unhampered by human activities (FW-DC-WL-02 07, GA-DC-WL-PR-02, GA-DC-WL-LK-03, and GA-DC-WL-PO-02) further direct the Forest to limit roads and motorized access on the Forest.

Overall, implementation of the Proposed Action will reduce the possibility of road related impacts (i.e. disturbance and displacement) to Selkirk caribou by reducing wheeled motorized access and road construction in the recovery area, limiting the opportunity for new roads, and creating secure habitat with lower human presence between at least April 1 and November 15 (FW-STD-WL-02). Nevertheless, as discussed above, the Revised Plan does allow road construction in old-growth caribou habitat to implement vegetation management projects that increase the resistance/resiliency of these stands. Projects proposing roads in caribou habitat that facilitate human access may result in disturbance or displacement of individual caribou but we do not expect these effects to rise to a level that would affect the population. This is attributed to the fact that under the Revised Plan, the acres where road construction would be allowed in the recovery area is reduced; access on any new roads constructed in the recovery area would likely be restricted (in terms of season of use and type of use) to comply with the Grizzly Bear Access Amendment; and hence, disturbance or displacement would likely be short-term (that is, caribou would move away from the presence of humans, but return after the human activity had ceased – since roads are likely to restrict motorized use as well as season of use).

General Effects of Human Access from Recreation on Caribou

This section describes the general effects of human access on caribou habitat followed by a specific discussion of anticipated effects in the action area as a result of non-winter dispersed recreation and winter dispersed recreation including over-snow motorized use.

A growing threat to woodland caribou is increasing human access into their habitat and the associated disturbance that it causes (Paquet 1997, Simpson and Terry 2000, Stevenson et al. 2001, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Seip et al. 2007). Apps and McLellan (2006) found that 'remoteness from human presence, low road densities, and limited motorized access' were important factors in explaining habitat occupancy in current caribou subpopulations. Increasing summer (as well as winter) recreation pressure can decrease habitat effectiveness for caribou. This is supported by observations by Allen (1998a, p.45) in which cows and calves would only come down into meadow complexes to feed at night when humans were not present and would move back to timber when disturbed by humans. Additionally,

Dumont (1993, pp.15, 31-33) observed hikers interrupting caribou activity where 64 percent of observations resulted in caribou leaving the alpine area to adjacent forested habitat.

Outdoor recreation is the fastest growing use within the national forest and it is a use that is expected to increase in the future. The Forest reports that since the 1980s, both motorized and non-motorized recreation use of roads, trails, and general forest areas have increased (USFS 2013a, p.31). The Forest reports that foot, horse, and mountain bike travel have increased, as well and to a lesser degree, cross-country and backcountry skiing (USFS 2013a, p. 32).

Effects of summer recreation on caribou are described in detail in Section B.4. Factors Affecting the Status of Caribou. High elevation basins that include meadows and riparian areas are preferred habitat by woodland caribou. Such areas are often snow-free earlier in the season, provide good visibility, and include an abundance of succulent vegetation. This makes them ideal habitat for caribou in general, and especially cows with calves. These areas also provide some of the most popular recreation destinations for backpacking, hiking and camping from July through October, with significantly increased human use observed over the last two decades due to publicity from local advertisement and guide books (USFS 2013 a, p. 124). Dumont (1993) noted that interactions between caribou and hikers on preferred summer range often resulted in caribou leaving alpine areas for forested habitat and theorized that this displacement likely increases caribou susceptibility to predation by pushing caribou into areas of reduced visibility.

Effects of snowmobiles on caribou are described in detail in Section B.4. Factors Affecting the Status of Caribou. Briefly, early and late winter is a time of high energy expenditure and potential stress for Selkirk caribou due to increasing snowfall and the shift from herbaceous forage to arboreal lichens (Rominger and Oldemeyer 1989; Servheen and Lyon 1989). Snowmobiling activities have the potential to displace caribou from suitable habitat, resulting in additional energy expenditure by caribou when they vacate an area to avoid disturbance (Tyler 1991). This results in an effective loss of habitat availability temporarily, and potentially for the long term if caribou abandon areas characterized by chronic disturbance. Simpson (1987) concluded that large groups of fast moving snowmobiles in combination with human scent caused woodland caribou to abandon an area previously used as winter habitat. Seip et al. (2007) reported similar adverse effects of snowmobiling on caribou where abandonment of high quality suitable habitat could not be explained by habitat conditions alone. Conversely, there is some evidence that caribou can tolerate a low level of snowmobile use within their habitat (Simpson and Terry 2000).

It has also been suggested that snowmobile trails provide hard packed travel corridors for predators, like wolves, to move into the alpine (Bloomfield 1979, Neumann and Merriam 1972). Wolf predation is often responsible for adult mortality and low recruitment in caribou populations within Canada (Bergerud and Ballard 1988, Gasaway et al. 1983, Seip 1991) but this has not been documented as a significant problem in the southern Selkirk population.

Effects of Winter Dispersed Recreation on Caribou in the Action Area

Winter dispersed recreation includes snowmobiling as well as cross-country and back country skiing and snow-shoeing.

A key component of understanding the potential impact to Selkirk caribou from winter motorized recreation is the expected level of use and distribution of over-snow vehicles across the landscape. The following summary of snowmobile activity on the IPNF is derived from the USFS BA (2013a, pp. 129-130). On the IPNF during the month of November, over-snow vehicle use is rare to non-existent due to the lack of snow or poor snow conditions. Over-snow vehicle use begins to increase starting in December and decreases in March, with the peak of use being January and February. During the month of April, over-snow vehicle use is minimal based on decreasing snowpack and increasing avalanche danger, with limited local, dedicated users attempting to access high elevation openings. While some areas of snow may persist into May, over-snow vehicle use is rare to non-existent in May because there is insufficient snow at lower elevations to access higher elevations and many access roads to higher elevations are closed or un-drivable due soft roadbed conditions. Even during the highest periods of over-snow vehicle use, activity is far greater on weekends along established routes and use areas than at any other time or location. During the week or in off-trail areas, there is a precipitous drop in over-snow vehicle use. Based on this information, snowmobiling poses the greatest risk of displacing/disturbing caribou during the winter months of December through March. During this time period, caribou are using early winter and late winter habitats. Early winter habitat consists of mature to old-growth cedar/hemlock forests and the lower limits of the subalpine fir/Engelmann spruce forests. Suitable habitats are multi-storied and have an overstory canopy cover greater than 70 percent. Late winter habitat consists of subalpine fir and Engelmann spruce forests on the upper portion of ridge systems.

With an overall increase in winter recreation and the advancement in snowmobile technology, the IPNF and the caribou recovery area has experienced an increase in snowmobile use during the last two decades (USFS 2013a, p. 130). Actual use in the recovery area has been tempered by the 2007 court-ordered closure of caribou habitat to off-route use. Overall, 169,031 acres of the recovery area on the IPNF are closed until a Winter Recreation Strategy is completed (L. Allen 08/02/2013 pers. comm.). An additional 70,558 acres are closed due to MA allocations under the existing plan (ibid). Hence, off-route snowmobiling is currently limited to 23,311 (9 percent) acres in the recovery area on the IPNF with additional snowmobiling occurring on 28 miles of groomed or designated routes within caribou habitat in the closure area (Table V-7). All Forest users, including outfitters and guides are subject to the winter closures. Hence, under the Revised Plan, there is a low likelihood of effects on caribou in winter habitat from snowmobiling due to the court-ordered closure, MA allocations, and the overall low number and distribution of caribou in the action area.

The court-ordered closure is a temporary means to reduce potential effects to caribou resulting from winter recreational activities until the IPNF develops and implements a Winter Recreation Strategy. While the Service cannot predict what the strategy will look like, or what, where, or when certain activities will be allowed to occur (e.g., snowmobiling), it is reasonable to presume that certain areas currently closed seasonally or permanently to snowmobiling due to the injunction may be available to snowmobiling once the strategy is developed and implemented. However, the Service anticipates that several elements of the Revised Plan will moderate the effects of a Winter Recreation Strategy on caribou, thereby limiting the potential for significantly increased disturbance and/or displacement of caribou from suitable habitat. Additionally, the Service will coordinate with the IPNF on the development of its Winter Recreation Strategy,

which may require amendment of the Revised Plan and/or reinitiation/amendment of this biological opinion to consider and analyze potential effects to caribou related to and stemming from snowmobiling not considered or analyzed herein.

Several elements of the Revised Plan would dictate the terms of the Winter Recreation Strategy. For example, as a result of MA allocations under the Revised Plan, an additional 37,835 acres of the recovery area will be restricted from over-snow motorized access (Table V-8). This is largely attributed to addition of recommended wilderness in two areas in portions of the Big Snowy, Myrtle, Trout-Ball, and Long CMUs. The majority of the Big Snowy CMU is already in recommended wilderness. Specifically, this would prohibit snowmobiling from being allowed under the Winter Recreation Strategy in the CMUs where caribou may occur in low densities based on winter census reports.

Additionally, the Strategy would be developed in consideration of Forest-wide desired conditions to limit disturbance in areas of seasonal importance to listed species (FW-DC-WL-01 and 03). Also, pursuant to GA-DC-WL-PR-04 and GA-DC-WL-PO-03 the IPNF, while providing access to the national forest through a winter motorized trail system that includes groomed routes and access to an array of off-trail areas, must also provide undisturbed wintering areas for woodland caribou in the Selkirk area and Selkirk Mountain range, respectively. These elements would reduce the potential for or magnitude of adverse effects on caribou that might occur through implementation of the Winter Recreation Strategy. For areas not located within the above-mentioned GAs, guideline FW-GDL-WL-04 would reduce the risk of disturbance from over-snow vehicle use during the winter period of December 1 to April 30 for areas known to be occupied by caribou and guideline FW-GDL-WL-01 would restrict management activities in denning habitat during bear emergence April 1 through May 1. December 1 to April 30 is the period during which adverse effects to caribou pose the greatest risk.

The risk of snowshoeing, cross-country, or ski-touring enthusiasts having adverse effects on caribou is low. Winter non-motorized recreationists venturing into caribou habitat likely represent a select number of enthusiasts willing to travel long distances “on foot” (i.e., powering their own skis or snowshoes). Cross-country skiing was the primary activity of less than one percent of all recreational users (1,277,700 people) based on Forest data from 2009 (USFS 2011b, Table 46). Snowshoeing was not included in the table. As evidenced in the Draft EIS on the Revised Plan, there are few people participating in these activities on the Forest (USFS 2011b, p. 285). Also, these activities are centered on developed recreational sites and generally associated with groomed or designated routes. A select few individuals would have the gear, knowledge, and training to venture far from roads on foot (skis or snowshoes) during the winter season. There are limited special use permits to groom trails for snowshoeing or cross-country skiing in caribou habitat. Therefore, under the Revised Plan, we do not expect these activities would result in adverse effects on caribou or caribou habitat.

Effects of Non-winter Dispersed Recreation on Caribou in the Action Area

The primary risk of effects of non-winter dispersed recreation on caribou is recreationists venturing into caribou habitat that causes disturbance or displacement of individual caribou or caribou cows with calves.

To reiterate, the high risk of disturbance or displacement in the action area is associated with high elevation basins that include meadows and riparian areas, which serve as preferred habitat for Selkirk caribou, especially cows with calves. These areas also provide some of the most popular summer recreation destinations for backpacking, hiking and camping with significantly increasing human use observed over the last two decades in the IPNF (USFS 2013 a, p. 124). Displacement of caribou may be more likely if hikers are accompanied by dogs. Allen (1998a, p. 45) observed the harassment and movement of caribou by an unleashed dog in the Selkirk Mountain ecosystem. Recently, Parks Canada banned dogs from all caribou habitat in Jasper National Park in an attempt to reduce stressors on the four distinct herds of woodland caribou in the Park.

Recreationists venturing into caribou habitat likely represent a select number of enthusiasts willing to travel long distances on foot. Hiking and walking was the primary activity of just 9.8 percent of all recreational users (1,277,700 people) based on Forest data from 2009 (USFS 2011b, Table 46). This equates to 125,214 individuals engaged in hiking and walking on Forest trails in a given year. Hikers venturing into the high elevation habitats of caribou likely represent a smaller subset of this total number. For example, backpacking (which represents those individuals traveling long, multi-day hikes and is thereby more representative of those venturing long distances) was the primary activity of just 0.3 percent of all recreational users (or 38,331 individuals) across the Forest. Nevertheless, as reported in the IPNF Revised Plan BA (USFS 2013a, p. 117), motorized routes do provide access to non-motorized trailheads in the Selkirks, with hiking trails constructed/maintained to 90 percent of the high elevation lakes, meadows and basins. The IPNF reports that such areas are some of the most popular recreation destinations for backpacking, hiking and camping from July through October. During this time period, caribou cows with calves would be especially vulnerable to disturbance.

Increasing non-motorized use of important seasonal meadow and lake complexes by backpackers and hikers likely reduces overall habitat effectiveness in some areas (e.g. Two Mouth Lakes, Ball Lakes, Pyramid Lake, which are in the Trout-Ball and Myrtle CMUs). Given that caribou occur in these areas at very low densities, the probability of overlap between caribou and backpackers and hikers accessing seasonal meadow and lake complexes that would result in disturbance or displacement causing adverse effects on caribou is low.

Effects of Other Actions on Caribou Under the Revised Plan

Activities with potential effects on caribou authorized by the Revised Plan include livestock grazing, mining, and collection of forest products.

Effects of Livestock Grazing on Caribou Under the Revised Plan

This section describes the general effects of livestock grazing followed by the specific effects anticipated in the action area.

General Effects of Livestock Grazing on Caribou

Livestock grazing has not been described as a threat to the Selkirk caribou population (49 FR 7390-7394, February 26, 1984). However, as noted in the USFS BA (2013a, p. 122) both

Selkirk caribou (during the spring/summer/fall months) and domestic cattle are primarily grazers. In theory, this presents the possibility of forage competition between caribou and cattle during the summer months and the risk of noxious weed infestation of high elevation meadow complexes (ibid). Additionally, there is a remote possibility that grazing administration could indirectly result in additional caribou mortality, as occurred in the mid-1990s, when a dead bull caribou was found tangled in a single strand of smooth wire fence within the Beaver Creek pasture of the Cow Creek allotment (ibid).

Effects of Livestock Grazing in the Action Area

The desired condition for grazing under the Revised Plan is that grazing occurs at sustainable levels while protecting resources (FW-DC-GRZ-01). The acres of caribou habitat where livestock grazing will be allowed are reduced by approximately 28,600 acres under the Proposed Action on the IPNF (Table V -8). Additionally, as described above in Section C.2, the number of allotments and number of AUMs is expected to remain the same over the next 10-15 years under the Revised Plan (USFS 2011b, p.443).

Cattle grazing is currently permitted in two allotments on 14,295 acres of caribou habitat situated in the Grass and Cow CMUs on the Forest (USFS 2013a, p.130). Much of the area where cattle grazing occurs is located in-and-around the Trapper Creek burn in the Cow, Beaver, and Grass Creek drainages. Grazing is typically centered in the lower elevation meadows of these drainages below 4,500 feet elevation (USFS 2013a, p.130). Therefore, there is unlikely to be overlap of habitat between cattle and caribou. As this area recovers from the fire and trees grow, the amount of transitory range decreases, which will necessitate a decrease in livestock. Given the low number of cattle on the allotments, the low level of likely overlap between the two in the summer months (USFS 2013a, p.130), we conclude that the risk of competition between cattle and caribou in the affected CMUs is insignificant.

Additionally, although grazing is allowed on 63 percent of caribou habitat under the Revised Plan, ongoing cattle grazing is unlikely to worsen habitat conditions for Selkirk caribou under the Revised Plan for the following reasons: the existing number of allotments and AUMs is expected to remain the same under the Revised plan; currently only two CMUs include grazing allotments where there is a low number and anticipated decrease in the number of cattle; there is a low likelihood of both species use of habitat due to elevational habitat preferences; and, overall, the acres where grazing is allowed is reduced by 28,600 acres under the Revised Plan (Table V -8).

Similarly, because of the low level of overlap between grazing and caribou habitat use in summer, and efforts undertaken by the Forest to address noxious weeds (FW-OBJ-VEG-02 and FW-DC-VEG-10 – which require the Forest to treat all sites discovered with new invader species and treat 15,000 to 30,000 acres over the life of the plan to reduce noxious weed and invasive plant density, infestation size, and/or occurrence) noxious weed invasions are unlikely to alter caribou habitat to a degree or extent that would adversely affect caribou's ability to find adequate forage.

Both allotments in caribou habitat include several miles of drift fencing. Shorter sections of fence are not considered an impediment to caribou movement, but longer sections may impede travel and contribute to caribou mortality (USFS 2013a, p.130). However, modifications to the grazing allotments upon renewal could be implemented to eliminate or reduce the risk of impediments to caribou movement or entanglement. These adverse effects would be addressed at the project level during future consultations. Currently, given the low density of caribou in the action area at this time, the potential for drift fencing to significantly affect individual caribou or caribou movement is considered to be discountable.

Effects of Mining on Caribou Under the Revised Plan

General Effects of Mining on Caribou

Generally, the impacts of mining on terrestrial wildlife species, including Selkirk caribou, result from the habitat loss and degradation associated with the footprint of the mining operation, required infrastructure (i.e., road construction and development), and the human disturbance where individual caribou are displaced from key habitats. Weir et al. (2007) documented avoidance by caribou in response to construction and operation of a mine during five seasons, illustrating the exceptional sensitivity of caribou to anthropogenic activities

Effects of Mining in the Action Area

There are no major mining operations on the IPNF at this time. The acres of Selkirk caribou habitat where locatable (e.g., gold, silver, copper) and material mining (e.g., rock, sand, gravel) is allowed is reduced by approximately 131,800 acres under the Revised Plan. Potential for future locatable mineral discovery is considered "low" (USFS 2013a, p.123). Most material mining pits are less than 5 acres in size and of the 434 active sites on the IPNF, two are located in the caribou recovery zone (USFS 2013a, p. 124). The acres where leasable mineral activities are allowed appear to be considerably increased under the Proposed Action (Table V -8). The IPNF reports that a 'leasable analysis' was completed for the 1987 plan and areas were identified where no leasing could take place. However, because the potential is so low for the IPNF, the Proposed Action did not complete such an analysis. Hence, on paper, there appears to be an increase in mineral leasing capability when in reality this is not the case (USFS 2013a, p. 120). Further, even though the acres where leasable mineral activities is allowed increases under the Revised Plan, this is not expected to have any effect on caribou habitat because there are no major mining operations at this time and the potential for leases is low.

Any future leasable or materials mining proposals on the Forest would be considered in terms of Forest-wide desired conditions that trend the Forest toward providing remote areas for species with large home ranges, recovering Federally-listed species, facilitating denning and habitat use through low levels of disturbance (FW-DC-WL-01 through 03), and allowing caribou to find areas with low levels of disturbance and opportunities for movement (FW-DC-WL-07). At the project level, Forest-wide guidelines would address potential effects of mining proposals on connectivity and linkage areas (FW-GDL-WL-15 through 17), restrict management activities that alter capable habitat (FW-GDL-WL-02), and avoid/minimize disturbance in known occupied caribou calving habitat from June 1 to July 15 (FW-GDL-WL-03).

Given the reduction in acres available to material mining; low likelihood of leasable mining; and the Forest-wide direction and project-level guidelines to reduce or limit the potential impacts of mining activities on woodland caribou under the Revised Plan, we do not anticipate that this mining proposals would result in adverse effects on caribou to the extent of impairment of the ability to feed, breed, or shelter.

Effects of Collection of Forest Products on Caribou in the Action Area

Collection of forest products includes personal and commercial firewood collection, limited personal use permits for such items as rocks and trees, and all other unpermitted use of forest products such as huckleberry or mushroom collection. The acres of Selkirk caribou habitat where personal collection of forest products will be allowed under the Revised Plan remains essentially unchanged from existing direction, while commercial operations are reduced under the Proposed Action (Table V -8). Generally, the collection of forest products (including commercial operations) occurs in close proximity to roads and the density of people engaged in this activity diminishes with increasing distance from a road or trail. Therefore, disturbance and displacement of caribou due to human activity and motorized use is the main effect from the collection of forest products and is most likely to occur along roads (USFS 2013a, p. 131). The likelihood of effects from human access along roads is greatly reduced in caribou habitat since most of the 190 miles of road in the action area are closed from April 1 to November 15 (due to management for grizzly bears) and access is further limited after that time period due to the condition of the roads. Additionally, as described above (Effects of Motorized Access and Road Construction/Reconstruction in the Action Area), the Revised Plan includes direction, guidelines, and standards that further reduce the likelihood of new roads or motorized activities in caribou habitat that would result in adverse effects on the species or individuals (FW-DC-WL-01, 02, 03, 04, 05, 07, and 12; GA-DC-WL-PR-02, GA-DC-WL-LK-03, and GA-DC-WL-PO-02; FW-STD-WL-02, FW-STD-VEG-01, 02; and FW-GDL-VEG-01 and FW-GDL-VEG-02).

The availability of caribou habitat to collectors of forest products under the Revised Plan is not expected to impair caribou access to habitat or ability to feed, breed, or shelter for the following reasons: collection is likely to occur near roads; the majority of roads in caribou habitat are closed from April 1 to November 15; there are no roads in the Snowy CMU (the only CMU occupied by caribou at this time); and several Revised Plan elements reduce motorized activities and likelihood of new roads in caribou habitat.

3. Analysis of Effects of the Action on Critical Habitat

The previous sections of this biological opinion analyzed the impacts of the Revised Plan on caribou, primarily by detailing and analyzing the effects on the habitat required by caribou. Thus, that analysis also provides an analysis of the specific impacts of the Revised Plan on caribou critical habitat in the action area, which is a subset of the suitable habitat in the action area. The PCEs for caribou critical habitat are:

1) mature to old-growth western hemlock/western red cedar climax forest, and subalpine fir/Engelmann spruce climax forest at least 5,000 ft (1,520 m) in elevation;

2) ridge tops and high-elevation basins that are generally 6,000 ft (1,830 m) in elevation or higher;

3) presence of arboreal hair lichens;

4) high-elevation benches and shallow slopes, secondary stream bottoms, riparian areas, and seeps, and subalpine meadows with succulent forbs and grasses, flowering plants, horsetails, willow, huckleberry, dwarf birch, sedges and lichens;

5) corridors/transition zones that connect the habitats described above.

There are approximately 8,501 acres of designated critical habitat on the IPNF in one CMU: Big Snowy. Under the Revised Plan, this CMU is allocated to three MA designations MA1a – Wilderness (2,578 acres); MA1b – Recommended Wilderness (5,078 acres) and MA4a – Research Natural Areas (845 acres). These specific MA designations greatly limit allowable actions on the IPNF such that no timber harvest, timber production, grazing, snowmobiling, materials mining, motorized access, or road construction would be authorized in Selkirk caribou critical habitat under the Revised Plan (Table V -8). The remaining allowable uses include dispersed, non-motorized recreation, including collection of forest products for personal use; leasable mining; and planned and unplanned fires. The effects of these activities are described below for each of the 5 PCEs.

To summarize the current status of critical habitat:

- There are 6,508 acres of subalpine fir forested habitat, 1,006 acres of cedar hemlock forested habitat, and 987 acres is non-forested, high-elevation habitat.
- Approximately 66 percent of forested critical habitat is >100 years old.
- There are no roads
- Since 1988, 2,170 acres were burned by wildfires
- Since 1987, there have been no prescribed fires in critical habitat since 1987

The same factors affecting caribou habitat affect critical habitat. The following sections provide an analysis of effects for each of the PCEs by risk factor: vegetation management, fire management, human access including road construction or reconstruction, dispersed non-winter recreation, and winter recreation; livestock grazing, and mining. Collection of forest products is addressed under dispersed non-winter recreation.

Vegetation Management

The effects of timber harvest and associated road construction would be avoided on PCE 1, PCE 2, PCE 3, PCE 4, and PCE 5 under the Revised Plan since these actions are not allowed in the wilderness (MA1a), recommended wilderness (MA1b), or research natural areas (MA4) encompassing caribou critical habitat on the IPNF.

Fire Management

The IPNF suggests that wildfires and prescribed fires would be the most useful tool to restore and or maintain historical vegetation conditions in MA1a,b designations and that its goal in using these types of actions would be maintaining and/or improving the juxtaposition of preferred caribou habitats across the larger landscape over time (USFS 2013a, p. 140). As previously described in *Effects of Fire Management Under the Revised Plan,* these activities may have short-to-long term negative impacts on caribou habitat including critical habitat and the associated PCEs (PCE1, PCE 2, PCE 3, PCE 4, and PCE 5).

Prescribed Fires – Adverse effects from prescribed fire would be avoided on the 845 acres of critical habitat in MA4a since this action is prohibited in this allocation under the Revised Plan.

Under the Revised Plan, guideline MA1a-GDL-FIRE-02 limits prescribed fire to be used when necessary to contribute to the recovery of a threatened and endangered species or to allow fire to play its natural role in wilderness. Guideline MA1b-GDL-FIRE-02 limits prescribed fire to be used as a tool for ecosystem restoration purposes where the need is linked to human-induced changes caused by factors such as fire suppression and/or the introduction of non-native species. Further, we anticipate the likelihood of using prescribed fires in caribou critical habitat is low given the few acres treated through prescribed fire in the recent past and its specific purpose in restoring whitebark pine habitat, which is beneficial to caribou (as discussed above), and the remote location and prohibition on motorized access in MA1a and MA1b (resulting in challenging logistics to implement such an activity). Therefore, we do not anticipate adverse effects on the PCEs (PCE1, PCE 2, PCE 3, PCE 4, and PCE 5) in critical habitat from prescribed fires activities under the Revised Plan.

Wildfires - Large-scale, stand-replacing fires in critical habitat would likely have adverse effects on the PCEs, particularly PCE1, PCE3, and PCE5. The effects to PCE1 and PCE5 would include direct loss of habitat and fragmentation of habitat and corridors, thereby limiting the ability of the PCE to function. The effect on PCE3 includes a significant reduction of lichen, an important winter food item for caribou. Wildfires in PCE2 and PCE4 would likely stimulate growth of herbs, forbs, and shrubs generating food items for caribou, particularly female caribou with calves, which favor high elevation basins and meadows as spring habitat. While some temporary displacement may occur, we do not anticipate adverse effects on PCE2 and PCE4 from wildfires.

As previously discussed, we anticipate that implementation of desired conditions FW-DC-FIRE-03 and FW-DC-WL-03 would result in full consideration of caribou habitat needs on the IPNF when making decisions about which fires are allowed to burn and which fires are suppressed. Hence, we expect the likelihood of adverse effects on PCE1, PCE3, and PCE5 under the Revised Plan is low.

Human Access

Potential effects of human access on critical habitat include motorized uses (wheeled vehicles on roads and snowmobiles) and dispersed recreation, including collection of forest products.

Roads and Snowmobiling

Under the Revised Plan, the effects of roads, snowmobiling, and snowmobile routes would be avoided on the PCEs (PCE 1, PCE 2, PCE 3, PCE 4, and PCE 5) since these actions are prohibited in the wilderness (MA1a), recommended wilderness (MA1b), or research natural areas (MA4) encompassing caribou critical habitat on the IPNF.

Dispersed Recreation and Collection of Forest Products

Human presence for recreational purposes and collection of forest products – likely to include mushroom picking and berry collection within at least some of the PCEs is not expected to result in direct adverse effects on the PCEs. However, human presence for these purposes could affect the ability of the PCE (PCE1, PCE2, PCE4, and PCE5) to function as a result in disturbance and displacement of caribou. For example, ridge tops and high elevation basins (PCE2) are utilized as calving grounds by females. Thus, recreational use of these areas during spring could adversely affect these areas abilities to support the calving needs of pregnant females. As described previously in *Effects of Human Access on Caribou Under the Revised Plan*, recreation is increasing on the IPNF and this trend is expected to continue. The extent of non-motorized recreation in the PCEs in critical habitat, which is all designated MA1a,b or MA4a under the Revised Plan, would continue to be limited by its remote location and primitive conditions; a select few individuals will venture long distances into these areas for recreational purposes. We expect hiking, snowshoeing, or skiing on trails would have limited likelihood of effects on the PCEs through disturbance of caribou. These activities typically involve few participants quietly making their way across the terrain. Hence, overall, we expect the PCEs, specifically PCE 1 and 5 to fully function.

A bigger concern is backpackers and hikers accessing seasonal meadows and lake complexes (PCE2 and PCE4). None of the important caribou seasonal meadow and lake complexes identified by the IPNF as at-risk for increasing use by backpackers and hikers are located in designated critical habitat (e.g. Two Mouth Lakes, Ball Lakes, Pyramid Lake, which are in the Trout-Ball and Myrtle CMUs) (USFS 2013a, p. 140). Hence, the risk of human presence in PCE 2 or PCE 4 contributing to disturbance and displacement of caribou would remain low under the Revised Plan.

Livestock Grazing

Livestock grazing effects would be avoided on PCE 1, PCE 2, PCE 3, PCE 4, and PCE 5 under the Revised Plan since this action is not allowed in the wilderness (MA1a), recommended wilderness (MA1b), or research natural areas (MA4) which encompass caribou critical habitat.

Mining

Leasable mining is allowed in the MA1b portion of caribou critical habitat (5,078 acres). The potential effects of mining on the PCEs (primarily PCE1, PCE2, PCE4, and PCE5) would likely result from habitat loss and degradation from the footprint of the mining operation, required infrastructure (i.e. road construction and development), and human disturbance. However, as described above and stated in the BA, there is extremely low potential for leasable mining on the IPNF, and there are no major mining operations on the IPNF at this time (USFS 2013a, pp. 123,128). Hence, we do not anticipate adverse effects on the PCEs (PCE1, PCE2, PCE4, and PCE5) from mining activities under the Revised Plan.

4. Species Response to the Proposed Action

Presently, caribou numbers and densities on the IPNF appear to be low (between 2 and 4 caribou occur in the U.S.) and numbers in the population as a whole have decreased in recent years (DeGroot and Wakkinen 2012, p.5). Much occurrence and habitat use appears to be limited to the Big Snowy CMU based on winter aerial surveys. As stated previously, recent data collected to monitor caribou population numbers were gathered through annual winter track surveys conducted a few times during the winter each year. Thus, it is possible that more caribou use habitat in the action area, and that such habitat is used more extensively within the Recovery Area in the U.S. during other seasons than the winter census surveys would indicate.

The majority of potential, chronic adverse effects from Forest management projects on caribou arises from timber harvest in caribou habitat and associated roads resulting in further habitat loss, fragmentation of habitat, alteration of predator-prey relationships, and disturbance and displacement of caribou. We conclude that the Revised Plan would continue to minimize the risk of such adverse effects on caribou and caribou habitat from Forest management activities in the action area.

Under the Revised Plan, projects and Forest uses may result in adverse effects to individual caribou. The primary risk of adverse effects on caribou under the Revised Plan would arise from: vegetation management activities; recreational use in high-elevation meadows and basins; winter travel; and fire management in caribou habitat. As discussed in the analysis of effects, we expect the likelihood of adverse effects from vegetation management and winter travel to be greatly reduced by the Revised Plan. Recreational use in high elevation meadows and basins is not known to overlap with caribou occurrence at this time. Given the return interval for fires in caribou habitat types and the factors the Forest will consider when deciding which fires to allow to burn and which fires to suppress, we do not expect substantial adverse effects on caribou as a result of fire management under the Revised Plan. Given the low density of caribou in the action

area and the extensive measures to limit the potential for adverse effects on caribou, we expect that the few caribou affected in the action area will respond favorably to the Revised Plan.

5. Critical Habitat Response to the Proposed Action

There is 8,501 acres of critical habitat in the Big Snowy CMU in the action area. We expect that critical habitat will respond favorably to Forest management under the Revised Plan. This is because the MA designations in this CMU supporting critical habitat greatly limit allowable actions on the IPNF such that no timber harvest, timber production, grazing, snowmobiling, materials mining, motorized access, or road construction would be authorized in Selkirk caribou critical habitat under the Revised Plan.

The remaining allowable uses include dispersed, non-motorized recreation, including collection of forest products for personal use; leasable mining; and prescribed fires, and planned and unplanned wildfires. Given the remote location of the critical habitat and the restriction on most allowable uses, appreciable adverse effects on critical habitat are not anticipated under the Revised Plan. We do not expect adverse effects on critical habitat from leasable mining or prescribed fires.

E. CUMULATIVE EFFECTS

Cumulative effects under the ESA include future state and private actions that are reasonably certain to occur in the action area. Current and future federal actions that are unrelated to the Proposed Action are not considered in this section because they require separate consultation under the ESA section 7.

Within the action area - the caribou recovery area on the IPNF- there are approximately 18,362 acres of private, state and corporate timber lands in-holdings within the CMUs boundaries on the IPNF. Therefore, 7 percent of the action area is affected by actions on state, private, and corporate timber lands and not all these lands provide caribou habitat. Actions on these lands that may affect caribou include timber harvest, fuels management, human access, and hunting.

The primary sources of effects on these lands for caribou and caribou habitat are timber harvest and fuels reduction activities (L. Allen 8/25/2013 pers. comm.) The effects of timber harvest on caribou and caribou habitat are detailed above in Section E. Since private landowners do not follow prescriptions for the benefit of caribou, it is unlikely that forested stands have the opportunity to development the old-growth habitat conditions that support caribou. The primary effect of harvest on these lands is its effect on connectivity between NFS lands in the action area. Because these lands are scattered parcels often at least partially surrounded by IPNF lands, Forest prescriptions at least partially offset the effects on connectivity on private lands. That is, the considerations for caribou applied at the project level on NFS lands offset impacts on connectivity from projects on private lands. Therefore, we do not expect that timber harvest on private lands results in substantial adverse effects on connectivity in the CMUs.

As we describe for fuels management in the WUI on IPNF lands, we expect these areas are mostly avoided by caribou, which are highly sensitive to human presence. We are also less

concerned about providing habitat for caribou in these areas due to the increased risk of disturbance, displacement, predation or possibly poaching. Therefore, we do not expect that fuels management on private inholdings in the CMUs would contribute to additional adverse effects on caribou in the action area.

Recreation is likely to increase on all land ownership types, if for no other reason than human population growth. There are no major recreation developments on private lands in the action area and most use of private lands is associated with active timber harvest (L. Allen 8/25/2013 pers. comm.). Incidental human presence for recreational purposes may result in temporary disturbance of caribou, but persistent effects are not anticipated.

Legal big game hunting within the recovery area has limited potential to add cumulatively to illegal or mistaken identity mortality of woodland caribou within the action area. Hunters are notified that it is illegal to possess a threatened or endangered and hunting and poaching has become less of a concern to the population over the past two decades (USFWS 2008a). Predation by mountain lions, wolves and others predators will continue, but will also be moderated by hunters pursuing these predator populations. The balance of predator-prey relationships depends in part on big game populations, predator populations, hunting regulations of predators and other factors.

In summary, we do not consider the adverse effects on caribou or caribou habitat on private lands in the action area to contribute to adverse effects on the caribou population.

All designated critical habitat is located on Federal lands. Therefore, no direct cumulative effects from state or private actions would affect critical habitat in the action area.

F. CONCLUSION

After reviewing the current status of the Southern Selkirk Mountains population of woodland caribou, the environmental baseline for the action area, the effects of the Revised Plan, and the cumulative effects, it is the Service's biological opinion that the Revised Plan, as proposed, is not likely to jeopardize the continued existence of the Southern Selkirk Mountains population of woodland caribou, and is not likely to destroy or adversely modify designated critical habitat.

1. Conclusion for Caribou and Caribou Habitat

After reviewing the current status of the Southern Selkirk Mountains population of woodland caribou, the environmental baseline for the action area, the effects of the Revised Plan, and the cumulative effects, it is the Service’s biological opinion that the Revised Plan, as proposed, is not likely to jeopardize the continued existence of the southern Selkirk caribou population.

Regulations implementing section 7 of the Act define “jeopardize the continued existence of” as: “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species” (50 CFR 402.02).

The best information suggests that implementation of the Revised Plan would not appreciably reduce the likelihood of survival and recovery of caribou. Our conclusion is based on the literature and information referenced in this document, meetings and discussions with IPNF, the information in the Revised Plan biological assessment (USFS 2013a), the information in the draft EIS on the Revised Plan (2011b), and information in our files. The *Effects of the Action* section analyzed and summarized key factors in detail.

The biological opinion analyzed a number of allowable activities under the Revised Plan, some of which could result in adverse effects on individual caribou. These include road construction, timber harvest in old-growth habitat, allowing wildland fires to burn in caribou habitat, and human disturbance/displacement of caribou. The Service's section 7 handbook explains that adverse effects on individuals of a species generally do not result in jeopardy determinations unless that loss when added to the environmental baseline, is likely to result in an appreciable reduction of the likelihood of both survival and recovery of a listed species in the wild by reducing the reproducing, numbers, or distribution of that species. In this biological opinion, we find that although some individual projects could result in adverse effects on individuals, these would not translate to effects on the population as a whole.

As detailed in the opinion, Revised Plan desired condition trends the forest toward a system of large, remote areas with limited human disturbance for wildlife that will move the forest toward conditions facilitating recovery of caribou. The Revised Plan would also reduce the likelihood of adverse effects from these actions, and/or would minimize the impacts of many adverse effects on caribou. As such, we conclude that although some individual caribou may be adversely affected by future individual projects, through project-level consultation these effects would not be allowed to rise to the levels that would have substantive impacts on the Selkirk caribou population as a whole. The results of such consultations will depend on the specific considerations at that time, including population status and resiliency, and the best available scientific and commercial data. Future project-level consultations that conclude potential adverse effects and incidental take are very likely to require additional considerations beyond those required under the Revised Plan. Depending on the aggregate effects identified in future consultations, additional considerations could include reasonable and prudent measures, and terms and conditions, in accordance with section 7 policy and implementing regulations (50 CFR 402.14).

We also conclude that projects proposing roads in old-growth habitat could result in adverse effects on individuals from increased predation risk, which could in turn have population level effects on caribou depending upon the features of the proposed action, relationship of the project to occurrence of caribou, and status of caribou at the time of the proposed action. Such actions are not proposed at this time and we believe the likelihood that such projects would even be considered would be low given the Revised Plan elements that provide for large areas of secure habitat with low levels of disturbance and maintain habitats and connectivity necessary to sustain caribou. Further, the areas where caribou occurrence is currently documented in the action area are designated wilderness, recommended wilderness, or primitive lands, where roads are prohibited. As a whole, the proposed action is not reasonably expected to reduce appreciably the likelihood of both the survival and recovery of the Selkirk caribou population in the wild by reducing the reproduction, numbers, or distribution of the species.

Thus, when added to the environmental baseline, and considering the status of the species and cumulative effects in the action area, the Revised Forest Plan would not appreciably diminish the likelihood of survival and recovery of the Selkirk caribou populations.

Our non-jeopardy conclusion is further supported by the following factors, as detailed earlier in this biological opinion.

The status of caribou and caribou habitat in the DPS is considered.

- The Selkirk population showed a modest increase (7%) from 2004 to 2009, reaching the highest level in almost a decade in 2008 and 2009 at 46 animals (Wakkinen and Johnson 2008, Wakkinen et al. 2010). However, the last two years of winter surveys indicates a population decline, with only 27 caribou located in 2012, including 23 in B.C and 4 in the U.S (DeGroot and Walkinen 2012, p.5).

- Most of the animals in the Selkirk caribou population occupy habitat in the B.C. portion of the recovery area (Wakkinen and Johnson 2006). Based on winter surveys, which provide a limited snapshot of caribou use in the U.S. portion of the recovery area, between 2 and 4 animals have been documented utilizing habitat in the U.S. Caribou may use habitat more extensively in the U.S. during other seasons of the year than demonstrated by the winter surveys, and it is highly probable there is continual movement of animals back and forth across the U.S./B.C. border .

- Augmentation efforts did not result in a significant increase in caribou numbers and distribution as had been hoped. However, the effort is thought to have prevented the extirpation of the population (USFWS 2008a).

- In Canada, 418,515 acres of habitat have been protected from further timber harvest to support caribou conservation. Caribou habitat on State and private lands within the U.S. portion of the recovery area remains at risk of further degradation and fragmentation due to inadequate regulatory mechanisms to address timber management on these lands .

The status of caribou habitat in the action area is considered:

- The IPNF includes 272,053 acres in the Selkirk caribou recovery area. This represents 29 percent of the caribou habitat in the recovery area and 61 percent of the caribou habitat in the U.S. (USFS 2013a, p. 109).

- Currently on the IPNF, more than 61 percent of all caribou habitat types (subalpine fir, cedar-hemlock, other) that are capable of growing trees are 100 years or older. Of this 61 percent, 22.5 percent is 150 years or older and likely supports appreciable lichen loading to provide winter foraging habitat for caribou (Stephenson et al. 2001). Abundant arboreal lichens are a key winter food source of mountain caribou (Stevenson et al. 2001, p.1; Paquet 1997, pp. 2, 13; Scott and Servheen 1985, p. 92; Servheen and Lyon 1989, p. 235).

The risk factors for caribou and caribou habitat associated with vegetation management are addressed:

It is the Service's opinion that the Revised Plan direction for vegetation management in caribou habitat does not appreciably reduce the likelihood of both the survival and recovery of the Selkirk caribou population.

- Approximately 63 percent of the caribou recovery area on the IPNF could be considered for timber harvest under the Revised Plan. No caribou habitat is within the lands suitable for timber production – that is, the land base used for determining allowable sale quantity and vegetation management for timber production. Therefore, the type of harvest to be proposed in caribou habitat would be aimed at achieving resource benefits, such as restoring native stand types or directing a stand toward desired conditions.

- Under the Revised Plan, the acres that could be subject to timber harvest would be reduced by 5,574 acres such that 63 percent of the caribou recovery area could be subject to timber harvest.

- If roads are proposed in caribou habitat in support of timber harvest activities, adverse effects from the indirect effects of possible increased predation on caribou may occur. This could in turn have population level effects on caribou depending upon the features of the proposed action, relationship of the project to occurrence of caribou, and status of caribou at the time of the proposed action. Such actions are not proposed at this time and we believe the likelihood that such projects would even be considered would be low.

- If roads are proposed in caribou habitat, adverse effects from the indirect effects of possible increased predation on caribou may occur. These adverse effects would be addressed by project-level consultations.

- The Forest reports that over the past 20 years there have been essentially no changes to caribou habitat on the IPNF as a result of timber harvest (USFS 2013a, p. 121). Since 1987, there has been less than 5,400 acres of timber harvest on the IPNF and these treatments were designed to move unsuitable habitat conditions towards suitable caribou habitat (ibid). Most changes that have occurred in forested habitat are attributed to unplanned fires, disease, or insect outbreaks.

- The likelihood of timber harvest on caribou is reduced by several factors including:

    - Forest-wide desired conditions to recover threatened and endangered species (FW-DC-WL-03); to limit disturbance in listed species habitat (FW-DC-WL-01, 04, and 05); to support old-growth habitat and associated species (FW-DC-WL-12).

- Forest-wide desired conditions and MA allocation to promote a forest-wide system of large, remote areas with low levels of disturbance so that caribou have the necessary space and habitat unhampered by human activities (FW-DC-WL-02 and 07, GA-DC-WL-PR-02, GA-DC-WL-LK-03, and GA-DC-WL-PO-02). MA1a,b,c,e-DC-WL-01, MA5-DC-WL-01).

- Project-level standards and guidelines that reduce both the likelihood of timber harvest as well as potential adverse effects on caribou from vegetation management in caribou habitat. Specifically, standard FW-STD-VEG-01 restricts vegetation management activities in old-growth stands to those that would maintain the characteristics of the stand such that it continues to meet the minimum old growth criteria as defined by Green and others 1992, errata corrected 10/2008. Caribou guidelines would: 1) FW-GDL-VEG-01 - limit timber harvest in old-growth stands to those that are designed to increase the resistance and/or resiliency of the stand to disturbances, while meeting the minimum old-growth criteria; 2) FW-GDL-VEG-02 - generally avoid road construction in old-growth stands; and 3) FW-GDL-WL-02 - require that management activities in seasonal caribou habitat should trend vegetation toward target stand condition. (Exceptions may occur when using fire to emulate natural disturbance patterns to benefit other listed species or for the long term maintenance of caribou habitat).

- Approximately 96 percent of the caribou recovery area overlaps with grizzly bear BMUs where the Grizzly Bear Access Amendment (FW-STD-WL-02) is applied. Timber harvest is limited to the grizzly bear denning period (November 15 through April 1) in core areas in BMUs on the IPNF. Outside core areas, limits on road densities may further limit the ability of the IPNF to conduct vegetation management activities where grizzly bear habitat and caribou habitat overlap (i.e., limitations on roads and requirements to retain core increase the difficulty in obtaining access for timber harvest operations, particularly outside the denning period).

- Revised Plan adherence to the NRLMD (FW-STD-WL-01) limits the rate and extent of harvest in mature, multi-story stands in lynx habitat in LAUs and limits the percentage of the LAU that can be converted to an early stand initiation structural stage by decade. This effectively limits timber harvest where caribou habitat overlaps LAUs (58 percent of the caribou recovery area on the IPNF overlaps with LAUs).

The risk factors for caribou and caribou habitat associated with human access are addressed.

It is the Service's opinion that the amount of roads, wheeled motorized access, and snowmobile access within the action area, as constrained by the Revised Plan and grizzly bear Access Amendment, adequately conserves effective caribou habitat and promotes the recovery and survival of the Selkirk caribou populations. It is our opinion that the Revised Forest Plan direction for access management does not appreciably reduce the likelihood of both the survival and recovery of the Selkirk caribou population.

- Currently, there are approximately 190 miles of road located within the Selkirk caribou recovery area and most are located behind gates closed to public use from April 1 to November 15 pursuant to the Grizzly Bear Access Amendment (FW-STD-WL-02).

- The acres of Selkirk caribou habitat where wheeled motorized access will be allowed is reduced by approximately 37,835 acres such that 68 percent of INPF lands in the recovery area would allow motorized use under the Proposed Action.

- Under the Revised Plan, allowable road construction/reconstruction is reduced by approximately 59,960 acres in in the recovery area on the Forest. This means that 46 percent of the caribou recovery area is available for new road construction under the Revised Plan.

- Currently, much of the caribou recovery area on the IPNF is closed to off-route snowmobiling. Snowmobiling is limited to 23,311 acres (9 percent) and 30 miles of groomed or designated routes in the caribou recovery area on the IPNF.

- Increasing non-motorized use of important seasonal meadow and lake complexes by backpackers and hikers likely reduces overall habitat effectiveness in some areas (e.g. Two Mouth Lakes, Ball Lakes, Pyramid Lake, which are in the Trout-Ball and Myrtle CMUs). Given that caribou occur in these areas at very low densities, the probability of overlap between caribou and backpackers and hikers accessing seasonal meadow and lake complexes that would result in disturbance or displacement causing adverse effects on caribou is low.

- New roads in caribou habitat could resulting in disturbance or displacement from human access, but we expect that the potential for adverse effects would be reduced or minimized through the Revised Plan desired conditions, standards, and guidelines described below:

    - Forest-wide desired conditions that emphasize the need for large remote areas with low levels of disturbance (FW-DC-WL-01, 02, 03, 04, 07, and 12 and GA desired conditions GA-DC-WL-PR-02, GA-DC-WL-LK-03, and GA-DC-LW-PO-02).
    - Guideline FW-GDL-VEG-02, which limits road construction and reconstruction in old-growth stands.
    - About 96 percent of the caribou recovery area overlaps with grizzly bear BMUs where the Grizzly Bear Access Amendment is applied. Therefore, any new roads in the caribou recovery area are likely to restrict motorized access and/or season of use.

The Risk Factors for Caribou and Caribou Habitat from Fragmentation, Connectivity, and Travel Corridors are Addressed.

It is the Service's opinion that the Revised Plan desired conditions, standards, and guidelines applied at the project level would avoid, reduce, or minimize adverse effects on caribou related to habitat fragmentation, habitat connectivity, and travel corridors between the U.S. and Canada. We conclude that this direction in the Revised Plan adequately conserves effective habitat connectivity and so promotes the recovery and survival of the Selkirk caribou population.

- As described for the environmental baseline, since 1987 less than 8,000 acres of caribou habitat have been affected by stand-replacing fires and less than 5,000 acres have been subject to timber harvest. Hence, it appears that current timber and fire management practices are not contributing to fragmentation of caribou habitat in the action area.

- The Revised Plan incorporates the following elements that will facilitate maintenance of habitat connectivity and linkage areas for movement of caribou within the recovery area and between the U.S. and Canada.

    - Desired conditions for wildlife and caribou create large, remote areas and movement opportunities and connectivity with populations in Canada (FW-DC-WL-01 and 07).

    - Forest-wide vegetative desired conditions (FW-DC-VEG-01, 02, 03, 04, 05, 06, 08, and 11; FW-DC-FIRE-03; GA-DC-VEG-LK-01, 02; and GA-DC-VEG-PR-02) would trend the Forest toward historical conditions and natural disturbance processes (USFS 2013a, p. 125). These desired conditions would trend the IPNF towards the amounts and distribution of seasonal habitats, cover, opening size, forage, and the vegetative components of connectivity similar to what woodland caribou evolved with on the IPNF (ibid). Trending towards the desired conditions for vegetation would also create habitats that are more resilient to large-scale disturbance. This would potentially reduce the risk of fires contributing to fragmentation in caribou habitat.

    - The Revised Plan desired conditions in MAs 1, 3, and 5 create habitat conditions within these management areas that contribute to wildlife movement within and across the forest (MA1a,b,c,e-DC-WL-01, MA5-DC-WL-01, MA3-DC-WL-01).

    - The Revised Plan desired conditions GAs support caribou habitat by providing direction for habitat conditions for wildlife movement, especially woodland caribou, throughout the Selkirk recovery zone (GA-DC-WL-PR-01), as well as overall wildlife movement across the Forest and between the Forest and Canada (GA-DC-WL-PO-01 and GA-DC-WL-LK-01).

    - The desired condition under the Revised Plans is that forest management contributes to wildlife movement within and between national forest parcels; movement between those parcels separated by other ownerships is facilitated by management of the NFS

portions of linkage areas identified through interagency coordination; and federal ownership is consolidated at these approach areas to highway and road crossings to facilitate wildlife movement (FW-DC-WL-18). This would be achieved at the project-level through guidelines FW-GDL-WL-15 through 17.

The Revised Plan Addresses the Risk Factors for Caribou and Caribou Habitat from Wildland Fire Management

- The acres where prescribed fire are allowed remains the same under the Revised Plan and the acres where natural ignitions are potentially allowed to have a role in altering the existing and future vegetation patterns increases from approximately 46,965 to 247,335 acres.

- Presuming the existing rate of prescribed burning in caribou habitat is similar under the Revised Plan (17 prescribed fire operations burned approximately 640 acres in 5 CMUs since 2000) combined with guideline FW-STD-WL-01, which implements the NRLMD, and limits prescribed fire in lynx habitat through VEG S6, the Revised Plan would avoid an appreciable reduction in caribou habitat or foraging opportunities as a result of prescribed burning. (Approximately 58 percent of the IPNF caribou recovery area overlaps with LAUs).

- We anticipate the likelihood of large-scale, stand-replacing fires that substantially reduce caribou habitat on the IPNF in the recovery area to be low. Such fires tend to occur at low frequencies (every 100+ years in spruce-fir habitat and every 200-300 years in cedar-hemlock habitat). Further, the Revised Plan desired condition for vegetation, as described above, would trend vegetation towards historical conditions creating habitats that are more resilient to large-scale disturbance (USFS 2013a, p. 126).

- Natural ignitions would potentially have a greater role in altering the existing and future vegetation patterns across the Forest. When a natural fire occurs, the IPNF is actively evaluating the conditions associated with the fire and making decisions about which ones will be suppressed and which will be allowed to burn, but potentially within a predetermined area. Hence, we expect that desired conditions FW-DC-FIRE-03 and FW-DC-WL-03 will be given due consideration by the IPNF when making decisions about which fires to allow to burn and which fires to suppress. Further, unplanned fires are addressed under emergency situations that include coordination with the Service when effects to threatened and endangered species are anticipated to be considerable (50 CFR 402.05).

The Revised Plan Addresses - in Part - the Conservation Needs of the Caribou Population

Based on the analysis of threats in the *Status of the Species* section of this document, the primary conservation needs of the Selkirk caribou population are summarized below. This is followed by an update on how these needs are being addressed on the IPNF.

1. Expand the size and distribution of the existing population.

2. Protect and restore large blocks of old-growth conifer forests preferred by woodland caribou on public lands.

3. Manage caribou predators in occupied habitat on an as needed basis until sufficient amounts of old-growth conifer forest are restored.

4. Manage human access to caribou habitat to avoid and minimize adverse effects to caribou caused by disturbance and increased levels of predation, especially during the winter when caribou are especially vulnerable to these impacts.

5. Maximize the resiliency of the caribou population to the adverse effects of climate change by achieving (1)-(4) above.

On NFS lands, the Revised Plan directly addresses needs 2 and 4 and partially addresses needs 3 and 5. The Revised Plan would protect old-growth through the following elements: 1) FW-DC-VEG-03 - over the long term, increase the resistance and resiliency of old-growth stands to disturbance events such as wildfires, droughts, insects and disease, and potential climate change effects as well as increase the percentage of old growth and other lands managed for old growth 2) FW-DC-WL-02 - A forest-wide system of large remote areas to accommodate species associated with large home ranges (such as: grizzly bear and wolverine) and low disturbance areas exists. 3) FW-STD-VEG-01 - which authorizes timber harvest or other vegetation management activities within old-growth stands, only if the activities would likely not modify the characteristics of the stand to the extent that the stand would no longer meet the minimum old growth criteria; 4) FW-GDL-VEG-01 - Timber harvest or other vegetation management activities may occur within old growth stands if the activities are designed to increase the resistance and/or resiliency of the stand to disturbances, while meeting the minimum old growth criteria as defined by Green et. al 1992, 5) FW-GDL-VEG-02 - Road construction (permanent or temporary) or other developments should generally be avoided in old growth stands unless access is needed to implement vegetation management activities for the purpose of increasing the resistance and/or resilience of the stands to disturbances.

Need 4 is addressed under the Revised Plan by elements that trend the forest toward a system of large remote areas with low disturbance to accommodate species associated with large home ranges (FW-DC-WL-02 and 07; MA1a,b,c,e-DC-WL-01; MA3-DC-WL-01; and MA5-DC-WL-01). Additionally, the acreage of caribou habitat where road construction, wheeled motorized vehicle use, and snowmobile use are allowed is reduced. Winter travel plans would be developed in consideration of the Revised Plan desired conditions including: 1) FW-GDL-WL-04. Disturbance from over-snow vehicle use during the winter period of December 1 to April 30 should be avoided or minimized in areas known to be occupied by caribou; 2) GA-DC-WL-PO-03. The winter motorized trail system provides groomed routes and access to an array of off-trail areas while providing undisturbed wintering areas for woodland caribou in the Selkirk Mountain range; 3) GA-DC-WL-LK-03. Areas in the Selkirk Mountain range with low levels of disturbance are used by mountain goat and woodland caribou during the winter; 4) GA-DC-WL-PR-02. Areas with low levels of disturbance are available for use by woodland caribou

throughout the year; 5) GA-DC-WL-PR-04. The winter motorized trail system provides groomed routes and access to an array of off-trail areas while providing undisturbed wintering areas with low levels of disturbance for woodland caribou in the Selkirk area.

Thus, we do not expect that the likelihood of survival or recovery of the Selkirk caribou population would be appreciably diminished through implementation of the Revised Plan.

2. Conclusion for Critical Habitat

The action is not likely to result in destruction or adverse modification of designated critical habitat. This is attributed to the following factors:

- Approximately 8,501 acres of the critical habitat unit occurs on the IPNF in Idaho and Washington in the Big Snowy CMU. This represents 28 percent of critical habitat in the unit.

- All critical habitat is allocated to wilderness (MA1a), recommended wilderness (MA1b), or research natural area (MA4a). Under these MAs, the primary mechanisms of effect on caribou habitat from forest management activities are not allowed: timber production; timber harvest; materials mining; grazing; road construction; and motorized use (including vehicles, all-terrain vehicles, and snowmobiles).

- The remaining allowable uses including dispersed, non-motorized recreation, including collection of forest products for personal use; leasable mining; and planned and unplanned fires. These actions are not expected to result in adverse effects on critical habitat for the following reasons:

    - None of the important caribou seasonal meadow and lake complexes identified by the IPNF as at risk for increasing use by backpackers and hikers are in critical habitat.

    - There are no major mining operations on the IPNF at this time and there is extremely low potential for mineral leasing on the IPNF.

    - There is a low likelihood of prescribed fire to affect the PCEs given the limited acres treated through prescribed fire in the recent past; the remote location and prohibition on motorized access in the associated MAs (resulting in challenging logistics to implement such an activity); and the limitation on the use of prescribed fires in MA4a.

    - While we remain concerned that under the Revised Plan unplanned fires may play a greater role as a natural disturbance agent, the Revised Plan includes provisions to consider effects on key resources (old-growth) and would ultimately trend the forest towards conditions that increase the resistance and resiliency of old-growth to fires, insect and disease outbreaks, and climate change. We acknowledge the Forest's inability to "manage" or "control" unplanned fires in all circumstances.

We anticipate that the IPNF – in making decisions about which fires to suppress and which to allow to burn – will consider desired conditions FW-DC-FIRE-03, which states fire may be suppressed when necessary to protect key resources, (i.e., caribou critical habitat) and FW-DC-WL-03, which seeks to recover listed species on the INPF. Further effects would be addressed when conducting emergency consultation as a result of wildfires in critical habitat (50 CFR 402.05).

G. INCIDENTAL TAKE STATEMENT

This biological opinion identifies management direction that allows for future activities to be proposed that may adversely affect caribou, including vegetation management, road construction, and use of wildfires to achieve vegetation objectives. The proposed action reduces the potential for incidental take to occur as a result of these actions. The fact that there is only the potential for future take from these actions, but not a certainty that take will occur, is not a legitimate basis for providing an exemption for take. Subsequent consultation, as appropriate, on these specific actions developed pursuant to the Revised Plan will serve as the basis for determining if an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the caribou in accordance with 50 CFR 402.14(i).

H. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service provides the following conservation recommendations for the caribou:

1. In coordination with the Service, develop objectives for each CMU as called for in the 1994 Recovery Plan; or if/when addressed in a revised recovery plan, to provide for habitat protection and improvement to baseline conditions.
2. Considering the issue of potentially altered predator/prey dynamics as a result of habitat fragmentation within and adjacent to the caribou recovery area, the Service recommends that the IPNF work cooperatively with other land management entities within the caribou recovery area to address the issue by avoiding/minimizing habitat alterations within and adjacent to the caribou recovery area that might enhance habitat for other large ungulates such as moose, elk, and white-tailed deer.
3. Considering the increase in popularity of hiking trails into high-elevation basins and meadows used as foraging habitat by caribou and calving grounds, the Service recommends the IPNF annually review winter census surveys and reports from the public of caribou observations in these areas such that management options can consider expanding of shifting habitat use by caribou.

4. Considering the potential for adverse effects of unplanned fires in caribou habitat, the Service recommends the IPNF report to the Service any ignitions and subsequent plans for fire management occurring in caribou habitat.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

I. REINITIATION NOTICE

This concludes formal consultation on the IPNF Revised Plan and its effects on Selkirk caribou. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if one or more of following occurs: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

J. CITATIONS AND PERSONS CONTACTED

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Allen. L. August 21, 2013. Personal Communication. Comments from Lydia Allen, IPNF, Wildlife Program Manager, to Kathleen Ports, USFWS Contractor, providing clarification to draft Revised Plan biological opinion analysis.

Allen. L. August 2, 2013. Personal Communication. Email from Lydia Allen, IPNF, Wildlife Program Manager, to Kathleen Ports, USFWS Contractor, providing snowmobiling data in the caribou recovery area in support of the draft Revised Plan biological opinion analysis.

Allen, L. July 31, 2013. Personal communication. Email correspondence from Lydia Allen, IPNF, Wildlife Program Manager, to Kathleen Ports, USFWS Contractor, regarding wildfire history in caribou habitat on the IPNF.

Allen. L. June 6, 2013. Personal communication. Email correspondence from Lydia Allen, IPNF, Wildlife Program Manager, to Kathleen Ports, USFWS Contractor, regarding overlap of caribou habitat and lynx habitat in the Wildlife Urban Interface on the IPNF.

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